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ABSTRACT

Environmental educators utilize activity guides as a primary method of diffusing environmental education material into educational settings. The most popular environmental education activity guide in use today is Project WILD. Project WILD has come under fire by various groups, especially animal rights groups. Accordingly, a content analysis study was undertaken to determine if the guide exhibits a predominantly anthropocentric versus biocentric bias. Anthropocentric perspective, linked to the "Dominant Western Paradigm," sees humans as separate and superior with respect to non-human nature. It provides other species value only as a "resource" to other humans, exhibits a strong confidence in science and technology, and has been implicated as a source of environmentally destructive attitudes. A biocentric perspective, linked to the "New Environmental Paradigm," places humans within the context of nature, extends "intrinsic value" to other species, and has been suggested as supporting more ecologically sustainable attitudes. The results of this study indicated that Dominant Western Paradigm and anthropocentric biases exist in Project WILD. Based on these analyses, recommendations have been made for altering the content of Project WILD. Contains 140 references. (Author)

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ED 361 199

PROJECT WILD AND THE DOMINANT WESTERN PARADIGM: A CONTENT ANALYSIS UTILIZING DEEP ECOLOGY

A Thesis
Presented
to the Faculty of
California State University, Chico

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Interdisciplinary Studies:
Environmental Ethics and Education

by
Blake Ingraham
Spring 1990

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DEDICATION

This thesis is dedicated to the Planet Earth, (?-1990), a world inclusive of all species of plant, animal and otherwise that exist today. It is also dedicated to Edward Abbey (1927-1989), a cantankerous ole crank who challenged us to question ludicrous authorities and concepts of progress, impelled us spend time with the land we love and fight for, and is now providing a feast for his beloved desert critters.

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In addition, Dr. Joanna Cowden was helpful and supportive as my Graduate Advisor, and I regret she was not present for the fruition of this thesis. Dr. Sarah E. Newton, who assumed the Graduate Advisor position from Dr. Cowden, not only provided valuable comments for my thesis, but happened to be one of the few professors actively investigating and addressing Deep Ecology in her work. I regret not being able to work with her more extensively.

Stimulating conversations, guidance and a steady stream of correspondence with Dr. Bill Devall, Humboldt State University, aided in the understanding of Deep Ecology and helped in the development of a new perspective on environmental education. His friendship and support was particularly valuable at times when the task of paradigm analysis seemed a lonesome struggle. In addition, the other half of the dynamic duo, George Sessions, Sierra College, provided encouragement, initial guidance, and steered me in the direction of new authors to ponder.

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ABSTRACT

PROJECT WILD AND THE DOMINANT WESTERN PARADIGM: A CONTENT ANALYSIS UTILIZING DEEP ECOLOGY

by

Blake Ingraham

Master of Arts

in

Interdisciplinary Studies:

Environmental Ethics and Education

California State University, Chico

Spring 1990

A considerable amount of concern has been expressed about the effectiveness of environmental education. Studies exploring environmental education have tended to focus on the general status of programs and the efficacy of specific teaching strategies and materials. Little attention has been paid to the content of environmental education programs.

Environmental educators utilize activity guides as a primary method of diffusing environmental education material into educational settings. The most popular environmental education activity guide in use today is Project WILD.

Few research studies have delved into Project WILD. The few that have concern either development or implementation of the guide, rather than the guide's content.

Project WILD has come under fire by various groups, especially animal rights groups. Accordingly, a content analysis study was undertaken to determine if the guide exhibits a predominantly anthropocentric versus biocentric bias. Anthropocentric perspective, linked to the "Dominant Western Paradigm," sees humans as separate and superior with respect to non-human nature. It provides other species value only as a "resource" to other humans, exhibits a strong confidence in science and technology, and has been implicated as a source of environmentally destructive attitudes. A biocentric perspective, linked to the "New Environmental Paradigm," places humans within the context of nature, extends "intrinsic value" to other species, and has been suggested as supporting more ecologically sustainable attitudes.

The results of this study indicated that Dominant Western Paradigm and anthropocentric biases exist in Project WILD. Based on these analyses, recommendations have been made for altering the content of Project WILD.

CHAPTER I

INTRODUCTION TO THE STUDY

Environmental education (EE) is a relatively new field. In fact, the term "environmental education" was probably first used in print in 1964 (Schoenfeld and Disinger, 1978). Because of this, and because environmental education is an approach that encompasses many disciplines, environmental educators have yet to come to a consensus with respect to its definition (Schoenfeld and Disinger, 1978). Richardson and Morgan (1977) defined environmental education as:

> . . . the process which develops knowledge, understanding, attitudes, and the formation of personal responsibility with regard to man's relationship with his socio-cultural and biophysical surroundings. (p. 8)

Schoenfeld and Disinger (1978) defined environmental education as:

> . . . a life-long, multidisciplinary approach to teaching, mass communication, community participation, or some other activity aimed at the development of a world population that is aware of, and concerned about, the environment and its associated problems and that has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (p. 29)

Hooper (1980) defined environmental education as "a multidisciplinary approach to teaching the interrelationships between people and their natural and manmade environments" (p. 352). This is the definition that will be used in this study.

Environmental education is related to terms such as nature study, outdoor education, and conservation education and although some educators feel these terms describe the same process, there are significant differences between them. Schoenfeld (1971) considered nature study to be one of the oldest "root-stocks" of environmental education, as they both attempt to increase awareness and appreciation of the ways of nature. However, nature study was concerned more with observation of nature and focused less on the actions of humans in ecological relationships. "Outdoor education" is a broad, non-specific term that applies to all outdoor experiences that cut across the curriculum, according to Schoenfeld. Clark (1975) suggested that "the terms conservation education and environmental education have always been synonymous. . . " (p.46), but according to Hooper (1980, p. 2), most researchers distinguish between the two terms. Hobart (1972) traced the roots of EE directly to conservation education and its "failure." Schoenfeld suggested that EE had a broader scope than conservation education and while conservation shows a focus that is resource-oriented (concerned about wise use of natural resources) and a concern with economic development, environmental education is more concerned with the quality of the human experience and would tend to explore assumptions about the costs and benefits of development and growth. Environmental education, per se, wasn't mandated at the federal level until the Environmental Education Act of 1970. Earth Day, April 22, 1970, could safely be said to be the first large-scale public environmental education activity in the United States, if not on Planet Earth as a whole. In the waning years of the 1980's, almost twenty years later, a resurgence of interest in the environment is occurring, possibly because of the crisis dimensions of the Greenhouse Effect and the general global warming. Environmental education is the educational vehicle that was created to address environmental problems and therefore it might play a more important role in public school educational curriculum in the near future.

A considerable amount of interest and concern has been expressed about the effectiveness of environmental education. The capability of public schools to equip students to deal with environmental problems has been "severely critiqued" for a long time (Hooper, 1980, p. 15). Many environmental education studies have focused on the problem of low levels of diffusion into existing curriculum, determining at what grade levels and subject areas EE is provided to students and the effectiveness of specific curricula and teacher training programs. Critique of the content, not just the quantity, popularity or effectiveness of programs, has been offered from time to time. Aldo Leopold (1966) referred to the direct predecessor of EE, conservation education, when he suggested:

> . . .Despite nearly a century of propaganda, conservation still proceeds at a snail's pace. . . . The usual answer to this dilemma is `more conservation education.' No one will debate this, but is it certain that only the volume of education needs stepping up? Is something lacking in the content as well? (p. 226)

Although EE differs from conservation education, Leopold's concerns are worth exploring with respect to EE. Because EE is interdisciplinary and a relatively recent educational innovation, it is usually diffused into existing curricula, rather than being taught as a separate subject. The primary mode for diffusing environmental education involves activity guides.

The most popular environmental education activity guide in use today is Project WILD. Project WILD is a joint project of the Western Association of Fish and Wildlife Agencies (WAFWA) and the Western Regional Environmental Education Council (WREEC). The Western Association of Fish and Wildlife Agencies is comprised of directors of the state agencies who are responsible for management of wildlife in their respective states, while WREEC is a not-for-profit corporation comprised of representatives of the state departments of education and state resource agencies in 13 western states. Project WILD was developed primarily by teachers and for teachers, with technical and financial support provided by WAFWA and materials and logistical support provided by WREEC. Project WILD was extensively field-tested and edited before being assembled in final form. It was designed as an "interdisciplinary, supplemental environmental and conservation education program emphasizing wildlife. . .(whose) primary audience is teachers of kindergarten through high school students"(WREEC, 1988, p. vii). Since 1983, over 100,000 teachers have attended Project WILD implementation and training workshops (R. Schafer, personal communication, July 19, 1989) and as of November, 1989, it is in use in 47 states (E. Scofield via J. Hooper, personal communication, November 21, 1989). According to Stoner (1986), Project WILD is ". . .the most widely used environmental program for students" in the nation (p.2). Because it is the most widely sponsored and supported of all curriculum guides, environmental education and Project WILD are synonymous in some people's minds.

Even though it is extremely popular, Project WILD has been the subject of concern of animal rights groups with regard to a "pro-hunting" bias, among them the Humane Society of the United States (HSUS, 1985). While the issue of whether or not Project WILD takes a pro-hunting stance has been thoroughly explored and addressed, a much more subtle bias that may be present in Project WILD, namely, an anthropocentric (human-centered) bias, has not been well explored. The possibility of such a bias in Project WILD and the implications of such a bias are extensively explored in this thesis.

Related to an anthropocentric perspective is the worldview or paradigm from which an individual or society makes value judgments. The worldview or paradigm to which an individual or culture subscribes is usually unconsciously assumed and is rarely examined, recognized or questioned by those who maintain that set of beliefs. An assumption could be made that because "environmental values are perceived to contradict American ideology . . . and the environmental movement is perceived as a threat to our industry and technology oriented culture" (Cummings, 1975, p. 26), that environmental education, and therefore, Project WILD, is outside the confines of the dominant worldview or paradigm. That validity of assumption with respect to Project WILD is also being explored in this thesis.

The dominant paradigm, called the Dominant Western Paradigm or DWP, has an anthropocentric or human-centered perspective and sees humans as separate and superior with respect to non-human nature. It provides other species value only as a "resource" to humans, and as such has been considered the root cause of many environmental problems (Ehrenfeld, 1978; Devall and Sessions, 1985). This paradigm often exhibits a strong confidence that science and technology will solve our problems (Cosgrove, 1982; Devall and Sessions, 1985) and has many of the same metaphysical and epistemological assumptions about "reality" as other positivist and empiricist philosophies which have dominated Western culture since the Scientific Revolution of the sixteenth and seventeenth centuries. Dominant reductionism, dualism, atomism, belief that science is intrinsically objective and belief that technology is best standardized and used at the highest attainable level are views that characterize this paradigm (Cosgrove,1982; Bogen,1985).

A "New Environmental Paradigm" (NEP) has been suggested as an alternative. The "New Environmental Paradigm," (Dunlap and Van Liere, 1978; Dunlap and Catton, 1980; Cotgrove, 1982; and Milbrath, 1984), has an increasingly biocentric perspective as it develops. It places humans within the context of nature, assigns them equal value with the rest of nature, and extends to other species "intrinsic value." Inherent in this worldview and in contrast to the Dominant Western Paradigm, are a "systems view" of the world. It is a Holism-dominant (focusing on "wholes", not the component parts as in reductionism), monistic (non-dualistic), non- hierarchical view which perceives that science is value-laden and that technology is best adapted to specific needs and circumstances (not standardized) and appropriate to needs (not as big and as much as possible). Part of the New Environmental Paradigm philosophy suggests that, as environmental worldview changes, greater attempts will be made to know and understand the limits of nature and the place of humans within these limits. Arcury, Johnson and Scollay (1984) tested the NEP using survey data and provided at least limited validation of this proposition. This paradigm, and philosophies that share the same set of beliefs and assumptions, has been proposed as providing a superior basis for long-term, sustainable inhabitation of the planet by human as well as non-human life (Devall and Sessions, 1985; Drengson, 1986).

The philosophical foundation for this thesis is based largely on a modern social movement called Deep Ecology. Deep ecologists, such as Arne Naess, Bill Devall, and George Sessions, have explored the assumptions and limitations of the Dominant Western Paradigm and anthropocentric attitudes. They have articulated an alternative way in which humans may sustainably coexist with other life on the planet, and with the planet itself. Without the Deep Ecologists, and the writers and thinkers which preceded them in questioning the Dominant Western Paradigm, it is doubtful that there would be a rationale for this paradigm analysis of Project WILD.

A Deep Ecological viewpoint is latent in the content of this thesis and is addressed by name intermittently.

The purpose of this study is to test the most widely adopted environmental education curriculum guide, namely, Project WILD, to see if its content and approach supports the tenets of the dominant paradigm, namely, a strong reliance on and presentation of techno-scientific concepts and especially with respect to promoting an anthropocentric worldview. There is concern that a predominantly science and "knowledge-centered" curriculum might be unable to reach the deeper levels of the human mind from which the exploitive and consumptive worldview originates (Swan, 1978; Sessions, 1985). It has also been suggested that an anthropocentric worldview does not accord other forms of life proper moral status and intrinsic value, thereby allowing exploitation.

Skolimowski (1984) maintained that:

> . . . anthropocentrism has brought a great deal of havoc to our culture and other cultures in its early form as the arrogance of secular humanism; in its more advanced form as the adulation of the myth of Faust (you only live once, and therefore, you live dangerously and at everyone else's expense); and in its most advanced form as the technological imperative-you conquer all because you have the supreme tools of modern technology at your disposal, a special blessing bestowed on you by God. . .all of our thinking is pervaded by anthropocentric tenets-often in spite of ourselves. Such is the condition of our species. (p.36)

It is possible that the wisdom and values gained by other cultures utilizing their thousands of years of non-science derived worldview, united but not dominated by the understandings of modern science, might have greater potential to achieve the behavioral-skill subgoal of environmental education than conventional EE approaches (Bennett, 1973). Bennett divided environmental education goals into affective, cognitive, and behavioral-skill subgoals. The behavioral-skill subgoal was described as follows:

> to help individuals develop the necessary thinking and behavioral skills for prevention of environmental degradation, and correction of environmental abuses, and the alteration and use of natural resources to enhance the functioning and quality of the environment to meet ecological including human needs. (Bennett, 1973, p. 1)

It has been suggested that these behavioral changes would necessitate a move towards less exploitive, more respectful relationships with other living things and establishing more harmonious and sustainable lifestyles which would allow others species to flourish along with humans. An analysis of both the Dominant Western Paradigm and New Environmental Paradigm for contributions to this end is included in Chapter Two.

Statement of the Problem

Few research studies have delved into Project WILD. The few that exist have focused on either the development, effectiveness or implementation of the guide (Charles, 1988). Fleming (1983) focused on effectiveness while Fleming (1985) focused on implementation and effectiveness. Charles (1986) conducted a "use and needs" survey. Cantrell (1986) conducted an implementation survey in Ohio. Smith-Walters (1988) conducted a "use and effectiveness" survey in Oklahoma and Zosel (1988) conducted a teacher use survey. None of the aforementioned studies have given Project WILD critical examination for the underlying philosophical orientation of the curriculum, the elements of an anthropocentric worldview or a lack of attention to what is considered by some to be the roots of our environmental problems, namely, the restriction of ethics to human-human interaction. No studies have analyzed Project WILD to determine if it indeed promotes a "humanist" perspective, which is anthropocentric and may tend to transmit assumptions which could be hazardous to a healthy ecosystem (Ehrenfeld, 1978). No studies have analyzed Project WILD for an overemphasis on the teaching of techno- scientific concepts and Dominant Paradigm worldview with the subsequent underemphasis on social, political, historical and economic factors underlying environmental problems. The developmental history of Project WILD and the limitations this might have on content have not been explored.

Project WILD, like any other collective effort, is a product of the political, social and economic constraints of the groups that developed it. A paradigmatic approach to knowledge is rarely, if ever, considered when striving for "factual accuracy, objectivity . . . and neutrality on controversial issues," as Project WILD has admirably done (WREEC, 1988, p. vii). Without paradigm analysis, it is possible that Project WILD might have been unknowingly limited from sufficiently addressing deeper issues as a result of its developmental history. If Project WILD has inadequately addressed the issues of worldview underlying the problems about which it attempts to educate, it seems important that this must be noted. And if it is to maintain its dedication to objectivity by not "advocating any particular point of view" (WREEC, 1988, p.vii), a need may exist for Project WILD to either correct for Dominant Western Paradigm worldview bias in future editions or state that it does not provide for all points of view.

Influence of the Dominant Western Paradigm

The human-centered worldview and other elements of the Dominant Western Paradigm have greatly influenced much that we see in the world today. The history of Western civilization and most of the fruits thereof are a product of the Dominant Western Paradigm and use of the scientific method. The scientific method is often used to reduce objects and systems to their smallest components and thereby understand the workings of the whole. The search for the molecule, atom and increasingly obscure sub-atomic particles is an example of the use of this approach to understand almost everything from the human body to the structure of the universe. From the time of Newton to the present, this approach and the belief that all the world, including humans and nature, can be understood as a mechanical process, has had profound effect on our world. Science and the reductionistic/mechanistic worldview of the Dominant Western Paradigm has helped build elegant physical and conceptual structures, such as buildings and rockets, as well as complex chemical, political and economic systems. The fruits of science and technology have provided many cultures with a higher standard of living in terms of material wealth. It has been assumed that this abundance of material wealth necessarily leads to a higher quality of life for humans, although this assumption has increasingly been questioned. Many of the scientific and technological "advances" for humans have resulted in a lessening of the quality of life for non-humans, but until recently this has not been a great concern for most people. Only recently have humans become aware that some of their creations might cause a lessening of the quality of life for their own species. It is possible that the "environmental movement" began and still exists with this awareness as its primary concern.

Many human constructs have bettered the human condition, while others have been used to dominate and degrade the existence of human "enemies." Obvious examples include the mechanisms and tools of modern war. However, there are much more subtle applications of this "technology." For example, advertising, and increasingly, economics in conjunction with advertising, are tools used to look at the "mechanism" of human behavior and then are used to manipulate or anticipate the activity of individuals and society for the gain of the user of the tool. Possibly fatal (in the long-term) misinformation about the environmental impacts of existing technologies, systematic campaigns by public relations firms to mislead or confuse voters, or the ability to "de-humanize" human suffering by referring to individual humans as objects, are a few of the ways that this mechanistic perspective can be used in a harmful way against other humans. However, while the use of technology against other humans has always been of concern in most cultures, technology has been perceived as a very useful, appropriate and value-free tool to use in controlling nature for human use. And to this end, anthropocentric attitudes have been vital. Without the human-as-superior-and-apart-from-the-rest-of-nature attitude which characterizes the anthropocentric ethical viewpoint, much of our utilization of natural resources would have been precluded or at least hindered. For example, if the worth and needs of non-humans had been considered, many species which are now extinct because of human actions would still flourish. Their existence might have been guaranteed by placing limits on the growth of technologies and human societies.

It is possible that the Dominant Western Paradigm and the anthropocentric perspective that is a vital part of that paradigm have been a natural part of our evolution. In the struggle to survive, they have been useful. It is debatable if they are still useful and it is possible that unquestioned adherence to these philosophies will eventually cause our own demise. Humans, like other animals, have tended to view the world solely from their own perspective. Our focus has, until recently, been exclusively on our own needs. Most animals, human and non-human, are more concerned with their own survival than with that of other species, or the survival of ecological relationships which support all species. However, there are three things that, as far as we know, do set us apart, but not above, the rest of nature, namely, our reasoning, ethical capabilities, and technological capabilities. These capabilities have brought us to the point where we are compelled to consider a less self-centered perspective.

The application of these possibly uniquely human characteristics greatly influence the world we live in at the year 1990. As the environmental crisis appears in the media daily and governmental leaders scurry between conferences and speeches about it, the question has been raised, "How are we to use these special abilities we have?" The answers provided by many government officials seem to consist of positive rhetoric about solving problems after more studies (which is a symptom of positivistic science "We have to be sure . . ."), the virtues of "volunteerism," and statements to assure everyone that the speaker is an "environmentalist." However, rarely do the solutions offered challenge the status quo of growth, development, and a pervasive "speciest" attitude. The solutions offered invariably fail to recognize, as Gary Snyder (1969) suggested, that economics is really a small sub-branch of ecology.

One question that has been asked by environmentalists is, "Are the ways in which we have used those abilities in the past going to provide us with a future?" To some people, the human-caused environmental problems, and the superficial solutions currently being offered by our "leaders," suggest that we will not survive as a species and we will eventually cause a collapse of the ecosystem, wiping out many other species with us. Because of that possi- bility, environmental philosophers have suggested that we cannot afford to maintain a status quo with regard to our worldview and current ethical systems if the status quo allows unlimited use of our reasoning and technological abilities at the expense of the environment. Environment- alists willing to go beyond the "band-aid/techno-fix" approach characterized in the lowest level of environmental awareness and concern (Miller, 1988, p. 594) seek alternatives in a new philosophy of values and ethics towards all living and non-living systems. We can answer the question "Will the "status quo" in the way we teach about the environment get us where we want to go?" by exploring the Dominant Western Paradigm and its implications further, and then examining the most popular environmental education curriculum for elements of that paradigm.

It has been suggested that the human-centered view of living in this world has helped to create the environmental crisis at hand by acting to preserve the environment only when human interests would best be served. This outcome is a predictable consequence of an anthropocentric perspective. If all things except humans lack inherent value and are of value only as an instrument for humans, the only reason to protect the environment would be to protect human interests. For example, many of the reasons given by environmental organizations and governmental agencies for preserving the tropical rainforests are based on what humans will lose if the rainforests are destroyed. We could lose the ability to produce medicines from plants that are found only in those forests. Such medicine might cure cancer or AIDS for the possible benefit of humanity. Furthermore, we need to have the rainforests standing to produce oxygen to offset our contribution of the release of CO2 to the greenhouse effect. These are the most frequently suggested reasons for the continuing existence of rainforest. The intrinsic value of rainforests and the life contained therein is rarely considered.

Humans are also more concerned than ever about the toxic wastes and pollutants that are produced in our industrial societies. We struggle to further control and manage our environment, this time not for "material, recreational or aesthetic satisfaction" but for our own survival. These are purely human-centered rationale for preservation. They appeal not to a sense of responsibility and ethics towards other living things but to purely selfish and possibly short-sighted motives. It has been suggested that since humans are just as integral a part of the biosphere as any other organism, our focus on making sure humans survive is defendable since "if humans survive, so does everything else." This argument is not supported by the facts, as we are the dominant animal to such an unbalanced degree (because of how we choose to use our abilities) that we have pushed many species to extinction and threaten virtually all life, including ourselves, with that fate. The intrinsic value of a world without a seriously degraded environment is rarely addressed except where aesthetics are concerned. The cost/benefit ratio of continued human activity and development of the planet to future environmental constraints on the quality and quantity of human life is the primary consideration. Proponents of a New Environmental Paradigm would suggest that these rationale for concern are inadequate and, if limited to human interests, possibly immoral or unethical.

The Dominant Western Paradigm idea that non-human nature has no intrinsic value and has only instrumental value as a resource has precipitated many problems (Devall and Sessions, 1985). The Dominant Western Paradigm emphasis on progress (and the linearity of time), material (economic) ends, and the "radical separation of self, spirit and the material world," have been considered a factor in the unparalleled resource exploitation and environmental degradation (Ehrenfeld,1978; Cotgrove,1982; Devall and Sessions, 1985). A focus on material and economic ends and self-aggrandizement (versus self-actualization in the New Ecological Paradigm), combined with increasing existential angst about the meaning of life, in part due to the separation of self/spirit and the material world inherent in the Dominant Western Paradigm model, have possibly been great contributing factors in a "consumerist" mentality.

American consumerism is a worldwide example of gluttony where "resources" are used at an astounding and unsustainable rate while the priceless is often replaced by the needless. According to Paul Ehrlich, Stanford University professor of population studies, "One American does 20 to 100 times more damage to the planet than one person in the Third World, and one rich American causes 1,000 times more destruction...." He added, "The most serious population problem in the world is right here in the United States" ("Americans called," 1990). Excessive, rapid, consumptive use often necessarily destroys the complex natural relationships present at the "raw materials" site, and they are replaced with less complex, less naturally sustaining relationships. "Primitive" human culture, often more sustainable and biocentric than ours, is frequently destroyed by modern culture either in the rush to exploit resources or in an effort to save them from their "primitive" ways. The driving force for rapid exploitation of natural resources is often to provide American consumers with the lifestyle they have come to want and expect. The profit motive is often behind many careless and needless exploitations of the environment. Many species continue to exist only because of a thread of protective laws, rather than public awareness of the intrinsic value of the non-human world.

Skolimowski (1981), Capra (1982,1985), Sessions (1983), Berman (1984), Devall and Sessions (1985) and others argued that we are severely limited by our techno-scientific worldview, and that we must explore and educate for an ecological worldview if we are to address the roots of our problems. Capra (1985) provided examples of the limitations inherent in the techno-scientific worldview, including the inability to break free of our mechanistic "cause-and-effect" way of seeing the world even after it has been shown to be dangerously limited. The mechanistic worldview of Newtonian physics has been a valid and useful approach for centuries. It has contributed greatly to our understanding, appreciation and domination of the natural world, as suggested at the beginning of this sub-topic. However, the era of Einstein and the "new physics" (Capra, 1982), along with our recent awareness of synergistic effects (Fuller, 1975) and the general insights of ecology, suggest the need to be humble about what we are able to predict and control. It might be time to acknowledge that our belief in intellectual abilities should be tempered with awareness of the number of times we, including the "experts," have been proven "wrong," and that there is a great deal of difference between wisdom and knowledge.

All these authors have suggested that the world has proven itself more complex and unpredictable that previously thought. This is not to say that the quest for knowledge is fruitless; we have had many benefits from this quest. These authors maintain that there are just too many problems with the current models of "reality" in general use. The history of science contains an un-ending "turn-over" in what is "true" (Kuhn, 1970). We have fared poorly in being able to predict the results and consequences of our actions. Often a reliance on a scientific understanding of a problem has resulted in a technological "fix," which in turn creates a tertiary problem that not even the most skilled researcher had anticipated. Therefore, a new way of perceiving the world, incorporating the insights of the most up-to-date science with older, ancient wisdom, has been suggested by proponents of the New Environmental Paradigm.

Pro's and Con's of the New Environmental Paradigm

An ecological worldview, as outlined in a "New Ecological Paradigm," is one which places humans and their techno-scientific capabilities in the web of life as an "equal" to other species, not as their keeper. It questions our right to drastically alter the planet to suit our needs. It also questions our ability to predict the repercussions of our activities, thereby indicating a need for restraint. Respect is also an important component of this worldview. Respect for non-human needs and for the intrinsic value of non-human objects is prescribed. Respect would also be extended to all humans; men and women from technologically advanced cultures as well as members of more "nature" based cultures, mistakenly called "primitive" in the past. Two hundred years ago, people of color were considered less than "human." Most natural and social scientists of the day supported that view. Our present day thinking, reflected in the Dominant Western Paradigm, is less severe but still quite hierarchical. When the artificial, hierarchical distinctions from our old worldview regarding non-human nature are dropped, humans can also be understood in a more egalitarian light.

A new way of defining the relationship between humans and non-human entities is called Deep Ecology. Deep Ecology, as illustrated and explored by Naess (1973), Devall and Sessions (1985), and others, is a perspective which doubts that the questions that are vital for the survival of a healthy environment are being asked. Deep Ecology provides "a way of developing a new balance and harmony between individuals, communities and all of Nature" (Devall and Sessions, p.7) and is the central reference point which will be used in this thesis to explore the questions and issues that are at the root of our environmental crisis. A Deep Ecological approach might suggest that many of our problems regarding resource over-exploitation and increasing extinction rates of species stem, in part, from the tendency of humans to grant great value to the non-human aspects of nature only when they are of great value to us. This is an anthropocentric or human-centered value system. A biocentric one, which Deep Ecology advocates, would give other species the "intrinsic value" and "rights" that most people now limit to humans. While Deep Ecologists extend intrinsic value to non-humans, there is not a great emphasis on "rights" or elaborate philosophical arguments concerning justification of rights or values. These are intuitive "truths" found when the false dualities of mind/body and spirit/matter are dismissed and extensive time is spent in nature. Devall and Sessions (1985) suggested, "In a certain sense, it (Deep Ecology) can be interpreted as remembering wisdom which men once knew" (p. 80). Many of the formal ethical arguments concerning non-humans are considered by environmental ethicists and philosophers, and this thesis also focuses on those disciplines.

Intrinsic value is an important concept because, according to Callicott (1980), to be the direct subject of moral consideration, non-human natural entities and/or nature as a whole must have more than instrumental value; they must have intrinsic, inherent, value. As a result of this lack of intrinsic value and subsequent lack of moral status, we are able to exploit these things, considering them only as "resources" for human consumption. While this has benefited humans greatly, this perspective threatens the collapse of the ecological communities and structural relations that support all life, including humans.

The primary reason for undertaking this thesis was to explore the need for a new worldview, particularly vis-a-vis environmental education. What the New Ecological Paradigm, Environmental Ethics, Deep Ecology and other manifestations of that new worldview suggest is technological capabilities to alter our planet have far surpassed our sense of ethics towards it. They would suggest that we must have an obligation to have a new ethical relationship with non-human entities. Beyond ethics and obligation, Deep Ecologists suggested that there is really no separation between the planet, non-humans and humans and our blindness to this fact threatens everything we know and value. This awareness is the "remembering" of ancient wisdom, found in a number of different cultural and religious traditions and recently validated with the insights of modern physics, yet mostly forgotten in the modern world. Our ability to reason has provided much fruit, yet critics of the Dominant Western Paradigm, anthropocentric ethics and "shallow ecology" (explored further in Chapter Two) suggest that we have a major blind spot.

As Albert Einstein (1972) said:

> The world we have made as a result of the thinking we have done so far creates problems that cannot be solved at the same level at which we created them. Therefore we drift towards unparalleled catastrophe. . . .We shall require a substantially new manner of thinking if mankind is to survive. . . .Our task must be to free ourselves. . .by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty. (p.1)

By definition, environmental education is concerned with increasing understanding and providing a sustainable relationship between humans and the world we now dominate. A "new manner of thinking" is what EE strives to provide but the philosophical underpinning of what is commonly considered EE has not been scrutinized. The basic thrust behind the New Environmental Paradigm suggests that we are at a point in time where we have a choice to make. In the history of life on the Planet Earth, as far as we know, this is the first and only time where a species must make a choice between conscious extinction or conscious evolution. In making that choice, we make a choice for the vast majority of the species now living on this planet. That requires a sense of the vast responsibility to open our eyes and act with clear vision and conscience. As Schindler (1989) put it, we must come to the end of our adolescence as a species:

> As a species, we must become adults. . . We must mature toward a more inclusive awareness...We are experiencing an evolutionary pressure which calls for a shift from egocentrism to ecocentrism. (p. 69)

Schindler (1989) quoted Elise Boulding, Professor Emeritus at Dartmouth, as she stated:

> Human beings construct social reality in their minds prior to the sociophysical task of constructing physical reality. They can do this casually, unconsciously, never fully aware of what they are doing, or they can realize, take responsibility for, and fully participate in what takes shape in their minds. (p. 147)

What this all points to is a more "humble" worldview. A worldview that acknowledges the complexity of the natural world and instinctively, from our past experiences, questions our ability to predict, instead of assuming we can successfully do so. This worldview recognizes that many of the boundaries that mechanistic science constructs between a researcher and the object of study have been shown to be questionable. For example, Einstein proved that "relativity" is inherent in the observation of physical phenomenon. The researcher's location and velocity has a great effect on all of reality, in particular, making time and space and perceptions thereof "relative concepts, reduced to the subjective role of elements of the language a particular observer uses to describe natural phenomena" (Capra, 1985, p. 89). Quantum mechanics implies a new notion of causality where, as Capra suggested with regard to the electron and the question of whether light behaves as a wave or a particle:

> If I ask a particle question, it will give me a particle answer; if I ask it a wave question, it will

> give me a wave answer. The electron does not have objective properties independent of my mind. (1985, p. 87)

Modern physics has validated what some very ancient social traditions (i.e., Taoism, Buddhism) have always suggested. For example, in contrast to the rigid, inert, mechanical world of Descarte and Newton, modern physics as well as the Buddhist worldview suggest that the "solid world" is an illusion because all matter is energy (E=MC2) and therefore everything is impermanent and in constant change. Quantum physics tells us that when you break matter into its smallest components, reductionism breaks down and the world cannot be analyzed into independently existing isolated elements. "Everything is connected" to a point where there can be no purely objective analysis, a world view very similar to the worldview of some Eastern philosophies. The New Environmental Paradigm has inherent in its epistemology this awareness, while the Dominant Western Paradigm still assumes that we can "study" our way to awareness and wise action. Paradoxically, many scientists seem to have failed to grasp the implications of modern physics and the work of perhaps the most revered of all twentieth century scientists, namely, Einstein and Bohr (Capra, 1982). They cling to the older worldview. Perhaps this is understandable, as even Einstein had trouble believing the implications of his discoveries and Bohr had to convince him!

Proponents of the New Environmental Paradigm suggest that it incorporates this new understanding of reality to a greater degree than the Dominant Western Paradigm. Most importantly, this worldview, an "ecological" worldview, calls for new relationships with other beings, recognizing that the questionable dichotomy between "I" and "it" and "us" and "them" is, to some degree, a remnant of the Dominant Western Paradigm.

Devall and Sessions (1985) and others suggested that many of our cherished political, economic, social and philosophical institutions are extremely anthropocentric and locked into a Dominant Western Paradigm sense of reality. The "correct" approach does not break along the line of the capitalist-socialist dichotomy, as both exhibit great disregard for the integrity of natural systems. Along with ecologist David Ehrenfeld (1978), they maintained that humanism and anthropocentrism have encouraged the radical exploitation of our world with little regard for anything non-human. This has begun to show itself as our numerous environmental problems. Deep Ecology suggests that maybe our most arrogant anthropocentric act will be to allow our population to continue to expand exponentially and cause the collapse of many ecosystems. If humans are the locus of value in the universe, it is only right that we do as we please.

The New Environmental Paradigm might suggest that environmental education, in general, and Project WILD, in specific, must be willing to tackle deeper issues if they are to successfully educate for the survival of as many species as possible. Sessions (1983) made a good point when he said:

> An adequate ecophilosophy or philosophy of environmental education must rest on a thorough critique of the contemporary urban/industrial technocratic social paradigm insofar as that paradigm is incompatible with the basic insights and principles of ecology. (p. 28)

Sessions suggested that an adequate philosophy of environmental education cannot be superficial. An adequate philosophy and practice of environmental education cannot be limited to the safety of an old worldview that avoids the roots of our problems and instead seems to suggest that if the kids acquire more knowledge and become "good little eco-scientists," our problems will be solved. If environmental education, in general, and Project WILD, in specific, were afraid or unwilling to address the deep roots of our problems, it would be very much like the approach of modern medicine to disease.

Modern medicine has been firmly entrenched in the old mechanistic world of Newton (Capra, 1985), which until recently tended to treat the symptoms while the overall mental health and eating habits of the patient were considered irrelevant. Major chemical therapy or "technofixes" were applied. The early indiscriminate use of antibiotics, with the resultant tertiary "side effects" of killing "helpful" bacteria and producing more resistant strains of "harmful" ones, is one example. While the understanding of virus and bacterial invaders has been extremely helpful to humanity, this "micro" or "atomistic" approach has been found to be necessary but not sufficient to promote good health. Drug therapy to treat depression is another example where many of the "cures" only made matters worse. More "holistic" forms of medicine have been adopted only after prolonged legal battles and interest on behalf of the public. Techniques such as acupuncture, which until recently were considered "hocus-pocus," still cannot be explained from within the paradigm of Western medicine. Yet acupuncture exists and works. Its theoretical basis is holistic, which is central to the epistemology of the New Environmental Paradigm, but foreign to the Dominant Western Paradigm. Therefore, the Dominant Western Paradigm is an inadequate and incomplete way of describing reality in the field of medicine and has been questioned. People are looking for and finding successful alternatives, despite resistance from some professional medical organizations, such as the American Medical Association (AMA). Environmental education curricula cannot remain free from scrutiny if it is to be the "medicine" for world health and survival.

If the observations and assumptions of Dominant Western Paradigm critics are true, why are the vast majority of humans still working under these assumptions? Why have we not, as a species, shifted to the New Environmental Paradigm? Kuhn (1970) suggests that both scientific and social paradigms experience "paradigm shifts" or rapid, major shifts in commonly held perceptions of reality. The move from a Ptolemaic (Earth-centered) to Copernican (Sun-centered) view of the local cosmos is one such example. That shift affected the whole structure of societies, which were arranged in a rigid hierarchical order with humans at its center. The Copernican challenge was considered very dangerous to the status quo (e.g., the Church and other hierarchies) and was met with great institutional resistance. It has been suggested that what we are faced with for survival is no less than a Copernican level shift in perspective (Schindler,1989) and that we are in the midst of that shift now. Albrecht et. al (1982), using the New Environmental Paradigm measurement scale of Dunlap and Van Liere (1978), found evidence of movement towards the New Environmental Paradigm. Anthropocentrism, humanism and other elements of Dominant Western Paradigm thinking could be perceived as an evolutionary stage in human development necessary to catalyze a move towards a New Environmental Paradigm. The New Environmental Paradigm also suggests a large amount of change is necessary; indeed, a paradigmatic level of change would likely lead to many changes in daily life. Change is often uncomfortable. There are also other reasons why a New Environmental Paradigm would be cautiously championed, often related to deeply-engrained anthropocentric belief systems and the perception that the New Environmental Paradigm challenges business and industry to "put the environment first."

Many of the questions raised in this thesis were first posed in the area of environmental ethics. The field of environmental ethics, a form of environmental philosophy, explores our ethical and moral relationships with the rest of nature. Central to this field is the idea that many environmental problems can be traced to a lack of moral consideration of non-human nature. It is believed that if our moral and ethical foundations with regard to non-human nature are faulty, we must replace them with a new ethic. This was first suggested by Aldo Leopold in his 1949 essay, "The Land Ethic." Currently, there is great debate in environmental ethics as to the viability of a biocentric perspective in human affairs, although at least one "workable" biocentric environmental ethic has been shown to exist (Taylor,1986). A biocentric perspective is a major component of the New Environmental Paradigm. However, an "ecocentric" perspective, as first championed by Leopold, has been suggested as a more viable option. Environmental ethics has been central in the development of these ideas. Therefore, environmental ethics and the possible ethical orientations that have been suggested therein will be extensively explored in Chapter Two.

Project WILD holds a prominent position in the field of environmental education. While never claiming to be "everything to everyone," Project WILD is possibly the primary source of most of the "environmental education" to which many children will be exposed (Stoner, 1986, p.2). It maintains too important a position in the field of environmental education to go unanalyzed and unquestioned. The purpose of this thesis is to analyze Project WILD to determine what it actually teaches, implicitly or explicitly, as compared to what it proports to teach. Project WILD is "interdisciplinary" according to WREEC, but it is possible that Project WILD overly focuses on science as compared to the other disciplines. It also claims to be both an "environmental" and a "conservation" education program (WREEC, 1988). There might be a contradiction in implied goals to try and be both an "environmental" and a "conservation" education program because the "conservation movement" and conservation education have both been implicated as being highly anthropocentric (Ehrenfeld, 1978) while environmental education strives towards a more sustainable and egalitarian vision. The "resource" orientation of the conservation ethic has been implicated in environmental decay, a topic addressed in Chapter Two. This thesis will focus on trying to discern what Project WILD actually is.

Hypotheses

1. Project WILD is not written with either a predominantly Dominant Western Paradigm (as indicated by an anthropocentric and/or techno-scientific emphasis) or a New Environmental Paradigm perspective.

2. Project WILD is not written with a predominantly anthropocentric or biocentric orientation.

Purpose of the Study

The purposes of this study are:

1. To analyze Project WILD in order to determine whether or not a predominantly Dominant Western Paradigm thinking or New Environmental Paradigm thinking is reflected in the content of the curriculum guide.

2. To analyze Project WILD in order to determine whether or not predominantly anthropocentric thinking or biocentric thinking is reflected in the content of the curriculum guide.

3. If anthropocentric or Dominant Western Paradigm thinking is reflected in the curriculum, to illustrate why such thinking is undesirable in a publicly-sponsored

environmental curriculum and suggest ways of mitigating its presence.

Definition of Terms

Anthropocentric thinking. This term refers to human-centered thinking. For the purposes of this study, the term will refer to a "what-does-it-mean-to-me-or-other-humans" perspective with regards to valuing or trying to understand natural systems. In more technical terms, it is a mode of thinking or worldview that focuses on the human perspective, viewpoint or concerns rather than the needs of the biospheric community. It is an integral part of the Dominant Western Paradigm (DWP).

Biocentric perspective. One that places value on the diversity of natural systems, regardless of the impact of that valuing on human goals or plans. There is a stress on the "intrinsic value" of all species. No qualification with regards to human considerations is necessary. It is a perspective that human needs, goals, and desires should not be taken as privileged or overriding in considering the needs, desires, interests and goals of all members of all biological species taken together. It takes the view that the Earth as a whole should not be interpreted or managed solely from a human standpoint (Watson, 1982). This is not to say that "vital" human needs are not to be met (Devall and Sessions, 1985, p. 71), but a much more narrow definition of vital human need is adopted than is in common usage today. From this perspective, the highest good is the prolonged existence of the wild (unmanaged, unmanipulated, undominated) life of the entire biosphere. Furthermore, no species is given greater claim for privilege than another (Fox, 1987). A biocentric perspective means that humans are treated with the same importance as all other parts of the biosphere because humans are inside nature. Human integration as part of the natural environment is part of the biosphere-centered perspective. Because humans are not granted privilege to act as if their needs have ultimate priority, this does not negate their value as a species in the web of life. Sustainable human populations and responsible human action to support those populations are considered natural if they do not necessitate extinction of other species. Human population levels or actions which damage the biosphere can be perceived as analogous to a cancerous growth in the biospheric "body." A biocentric perspective is a major aspect of a "New Ecological Paradigm" (NEP).

Ecocentric Perspective. A term analogous to biocentric but more inclusive. The central foci of concern in a biocentric perspective are all living things and systems of living things. An ecocentric perspective explicitly includes the non-living support systems of life in its locus of value and concern, while a biocentric perspective does so implicitly. The term "ecocentric" is now being used more commonly (B. Devall, personal communication, September, 1989) but because more has been written about biocentric attitudes, the term biocentric is more common in this thesis. For the practical purposes of this thesis, the terms "biocentric" and "ecocentric" are interchangeable.

Paradigm. A paradigm is the collection of values, beliefs, habits, and norms which forms a frame of reference for a collectivity of people, such as a nation.

Dominant Western Paradigm. Also called the Dominant Social Paradigm, this paradigm is based on a strong belief that human needs are of primary and overriding importance to all needs of other entities, systems, or individual beings. Therefore, human-centered solutions to problems are the best for all. A strong faith in the primacy of human abilities to reason and find solutions to problems is inherent in this perspective. Management, technological solutions and, at best, stewardship, are the predominant approach to interaction with the natural world. See "Anthropocentric Perspective." The underlying assumptions of the Dominant Western Paradigm have been explored in detail above and in Chapter 2.

Humanism. Humanism is defined as "Any system of thought in which human interests and values are taken to be of primary importance (Random House Dictionary, 1980)"

New Environmental Paradigm. Also called the New Ecological Paradigm, this is a paradigm or worldview in which humans are equal members of the natural world rather than being distinct from nature and exempt from natural laws. As a result, the beliefs of inevitable human domination and manipulation of nature through the use of technology and "management" techniques are changed to a belief in the necessity of understanding the limits imposed by nature and learning how to live within those limits. Incorporated in this perspective are a biocentric or eco-centric worldview. "Deep Ecology" is one of the most thorough explorations of this new worldview or paradigm.

CHAPTER II

LITERATURE REVIEW

A considerable amount of concern has been expressed about the effectiveness of environmental education (Hooper, 1980, p. 15). This may be largely due to the substantial number of research studies that indicate students enrolled in public schools have inadequate levels of knowledge with respect to environmental matters (Selim, 1950; Giles, 1958; Shaw, 1961; Hounshell and Liggett, 1973; Eyers, 1975; Richmond and Morgan, 1977; Pettus and Teates,1983; Blum, 1987). Furthermore, the effectiveness of environmental education has not been the subject of a long-term, longitudinal study (J. Hooper, personal communication, April 19, 1988). Environmental educators have identified a number of major problems in public school environmental education programs including:

1) low status as compared to other programs in schools,

2) teachers lacking the time to implement programs (Jankowski, 1975),

3) lack of funding (AAHPER, 1970; Menesini, 1971),

4) uninformed instructors (Cummings, 1975; Buethe and Smallwood, 1987), and

5) low levels of adoption into the curriculum (Hooper, 1985).

Volk (1983) found that professional environmental educators believe that there is a major discrepancy between the desired and actual status of environmental education, and that environmental education goals are not being met with existing curricula. It has also been suggested that the approach with which environmental education is infused and integrated into existing subjects is usually supplemental, often haphazard and is therefore ineffective for achieving the desired increase in knowledge and behavioral modifications. Stephen Van Matre (1988) summarized the situation "Supplemental and infusion has turned out to equal superficial and ineffective."

Most of the aforementioned studies and opinions suggest that if we have greater adoption of existing curricula or possibly a more focused, sequential approach, we would have greater success in environmental education. However, there is considerable concern that the content and scope of what _is_ being taught is insufficient to nurture human actions necessary for environmental balance, literacy and survival.

Van Matre (1989) felt that environmental education has been "co-opted by the Cornucopians. . . those who believe that the Earth is our cornucopia and all we have to do is a better job of managing it" (p.3). He and others focused on Project WILD, maintaining it has a "subtle emphasis upon management as the only viable approach to our relationship with the other life on this planet"

Stegenthaller (1986) suggested that Project WILD has a profound bias towards one particular view of the world, namely, an anthropocentric view in which the natural world exists to serve the needs and wants of human kind. Horwood (1987) provided a critique of the Canadian Wildlife Federation's version of Project WILD (which is almost identical to the U.S. version) with respect to an anthropocentric bias. He suggested that it is seriously flawed in that it presents a human-centered view of the world while purporting to be unbiased. He contrasts the anthropocentric perspective, in which humans are the center of concern, alienated from the environment and in control of nature by technological means, with the biocentric view, which puts the entire biosphere at the center of concern and considers humans as having no more right than other beings to dominate and control that biosphere.

Horwood listed four pieces of evidence to support his claim:

1. A preponderance of photographs of humans, human artifacts, and animals that humans like or resemble.

2. *Exclusion of humans from its scheme of wildlife* classification.

3. Lack of activities that teach the stated concept of wildlife's intrinsic value, although each of five other stated values (e.g., "Wildlife has ecological and scientific values" or "Wildlife has commercial and economic values") has 9 to 15 teaching activities each.

4. Lack of activities that illustrate the human position in the food web.

Drawing upon the work of Evernden (1985) and others, Horwood outlined some aspects of two contrasting worldviews, namely, anthropocentrism and biocentrism. He suggests that a human-centered (anthropocentric) view of the world comes "easily" for humans and isn't necessarily "wrong." It is a widely held perspective, with roots in the Judeo-Christian tradition and Platonic and Cartesian philosophies, and he argued it is a "fundamental assumption of European culture wherever it is found." It has been the practical driving force of the European pioneers in converting the North American wilderness into immense tracts of cultivated and managed terrain (Nash, 1982). It has provided a hierarchy of value among living things, with humans outside the rest of nature and at the apex of value. However, there is a growing interest among people to explore biocentrism as a superior basis for understanding the world and living in it over prolonged periods of time (Drengson, 1986).

A biocentric perspective is much less common than an anthropocentric one in our culture, yet it survives in aboriginal cultures. Based on respect for all creatures instead of the hierarchy of the anthropocentric view, a biocentric perspective views humans as inside and a part of nature. Instead of other creatures being there for humans to use selfishly, there is a "give and take" between all parts of nature. If you take, you do so with respect, and know that you will and must give thanks and support to those creatures in some other way. For the anthropocentric Western world, the ecological perspective that everything is linked and related is a relatively new awareness. In cultures that have a biocentric philosophical or spiritual base (such as Native American and Taoist-influenced cultures), a biocentric view has always been an integral part of their worldview and lifestyles.

According to Horwood, detachment and separation from the natural environment is part of the anthropocentric perspective. This often leads to "estrangement, alienation and ultimate denial of the intrinsic value of the rest of the animate and inanimate world." People having an anthropocentric viewpoint desire to predict and control nature, to "make it tidy" for our own use. When the problems inherent in this approach appear, they are "answered by applying increasingly large technological remedies." In contrast, management is much less important in the biocentric perspective.

With humans perceived as part of nature in the biocentric worldview, there is a sense of attachment to all things. Attachment, when developed, leads to recognition of relationship, a sense of kinship and eventual identity with the rest of the world (Naess, 1985). In a world full of beings with lives of their own, uncertainty associated with natural cycles is more tolerable because those cycles support other "kin." Nature is "messy" and problems are answered best by natural fixes. Management, if used at all, would take into consideration the idea that "the highest good is the prolonged wild life of the entire biosphere and no species has greater claim to privilege than another" (Fox, 1987, p.5).

Horwood (1987) concluded that although anthropocentrism has long been a fundamental assumption of European culture, it has failed to provide a sustained, healthy biosphere. There are many people who would suggest that the anthropocentric perspective is still the best way to relate to our environment and Horwood suggests that it is unrealistic to expect that this anthropocentric perspective "would disappear from curriculum overnight" (1987, p.14). Therefore, according to Horwood, there is a place in the curriculum for materials like Project WILD, "provided they are suitably labeled and not misrepresented as telling the whole story. . . . " (1987, p.14). He also suggests there is "an equally great need to examine anthropocentric assumptions critically and to have alternative views, like biocentrism available for study and use" (1987, p.14). This thesis is, in part, focused on validating or invalidating Horwood's contention that Project WILD is anthropocentrically biased. Information was gathered to determine how Project WILD was developed and what events or philosophies have led it to be what it is today.

Project WILD Developmental History

The developmental history of Project WILD is worthy of inspection because it might illustrate the intentions and philosophies of the publisher and most influential body associated with Project WILD, namely, the Western Regional Environmental Education Council (WREEC). It also highlights other events in the evolution of this text.

In 1970, the Western Regional Environmental Education Council (WREEC) was formed as a federal project, using a grant from the U.S. Office of Education. It was composed of representatives of state departments of education and state natural resource agencies for thirteen western states. In 1973, WREEC began development of Project Learning Tree through a grant from the American Forest Institute, a forest and wood products industrial organization. As of 1976, Project Learning Tree was available for public use and WREEC became an independent, nonprofit educational corporation. In 1980, WREEC received a grant to develop Project WILD from the Western Association of Fish and Wildlife Agencies (WAFWA). WAFWA is a group comprised of the directors of the state agencies in 13 Western states who are responsible for management of wildlife in their respective states. They, along with WREEC, are the "joint sponsors" of Project WILD.

Project WILD was developed and extensively field tested from 1980 to 1983 for its ability to improve levels of environmental knowledge and to determine the effectiveness of program implementation in public schools. Project WILD was created with the aim of maintaining a neutral position on issues by soliciting "input from a great number of people- educators, preservationists, conservationists, wildlife managers, business and industry representatives, and others" (WREEC, 1988, p. ix) while striving for ". . . factual accuracy and objectivity . . . " (WREEC, 1988, p.vii). With regard to environmentally and politically controversial issues, Project WILD maintained a commitment to

". . . treating such issues fairly and honestly, without advocating any one particular point of view . . . " (WREEC, 1988, p. vii). In 1983, Project WILD was available for classroom use. In 1984, The Humane Society of the United States (HSUS) and seven other organizations expressed concern with what they perceived as a pro-hunting bias in Project WILD. On the invitation of the Project WILD steering committee, HSUS submitted a critique. HSUS (1985) objected to ". . . a strong bias towards a utilitarian and manipulation-based approach to wildlife" (p. 2). It was believed that Project WILD did not stress an intrinsic value of wildlife and instead viewed ". . . wild animals as commodities that can and should be manipulated to allow consumptive use by humans" (1985, p. 2).

Project WILD rewrote 92 percent of the activities that the HSUS consortium wanted altered. In many cases, neutral statements were added to ameliorate objections (Barnes, 1986, p. 4). HSUS and other "animals welfare" groups (collectively known as HSUS,et al.) were not completely satisfied, but the California State Board of Education ". . . approved and endorsed Project WILD for use in California schools" in May, 1985 (Meyer, 1985, p.1).

By all indications, the steering committee of Project WILD showed great willingness to analyze and accommodate the concerns of HSUS (1985) and other such groups. The committee has also shown consistent interest in neutrality and improvement, having built-in a wide range of input mechanisms at the design phase and later repeatedly asking for critique. What Stegenthaller (1986) and Horwood (1987) suggest is that Project WILD has built-in "blind spots" which have not been sufficiently addressed. They, and others such as Bogen (1985) would suggest that intent to maintain "neutrality" and solicit of a wide range of input is fruitless if the paradigm or worldview within which input was created, and from which most revision and input come forth, is tainted with the same perspective. Having discussed anthropocentric and biocentric views and the developmental history of Project WILD, a deeper exploration of the Dominant Western Paradigm, its characteristics and its manifestation in the resource agencies which sponsored and helped to develop Project WILD is worthwhile.

The Dominant Western Paradigm:
Key Elements

A paradigm is the collection of values, beliefs, habits, and norms that form a frame of reference for a collectivity of people, such as a nation. The dominant paradigm in Western societies, also called the Dominant Western Paradigm (DWP), or Dominant Social Paradigm, has an anthropocentric (human-centered) perspective and sees humans as separate and superior with respect to non-human nature

(Devall and Sessions, 1985). It provides non-human species value only as a "resource" to humans (Ehrenfeld, 1978; Devall and Sessions, 1985; and others). This paradigm also exhibits a strong confidence in science and technology (Cosgrove, 1982) and has many of the same metaphysical and epistemological assumptions about "reality." Dominant reductionism, dualism, atomism, belief that science is intrinsically objective and technology is best standardized and used at the highest attainable level are characteristic of this paradigm (Cosgrove,1982; Bogen, 1985). Four basic assumptions of the Western worldview or Dominant Western Paradigm are summarized by sociologists William Catton, Jr. and Riley Dunlap (1980, p. 15-48):

1. People are fundamentally different from all other creatures on Earth, over which they have dominion (defined as domination).

2. People are masters of their own destiny; they can choose their goals and learn to do whatever is necessary to achieve them.

3. The world is vast, and thus provides unlimited opportunities for humans.

4. The history of humanity is one of progress; for every problem there is a solution and thus progress need never cease.

Ecologist David Ehrenfeld (1978, p. 16-17) would add corollaries to this last assumption:

1. All problems are solvable by people.
2. Many problems are solvable by technology.
3. Those problems that are not solvable by technology, or by technology alone, have solutions in the social world (of politics, economics, etc.).

Humanism

Humanism is defined as "any system of thought in which human interests and values are taken to be of primary importance" (Random House,1980). Although not explicitly included in the Dominant Western Paradigm concepts of Catton and Dunlap (1980), Cosgrove (1982) or Bogen (1985), humanism is a human-centered (anthropocentric) perspective, having at its center of concern human needs and values. A professor of ecology at Rutgers University, David Ehrenfeld (1978), discussed in great detail the pitfalls, false assumptions and myths of the worldview called humanism. He traced the rise of this "religion" and described how it has all the characteristics of a religion. According to Ehrenfeld (1978), at its core is:

> a supreme faith in human reason- its ability to confront and solve the many problems that humans face, its ability to rearrange both the world of nature and the affairs of men and women so human life will prosper. (p. 5)

Ehrenfeld suggested that false or greatly exaggerated dichotomies exist in this worldview, such as good-bad, socialist- capitalist, Republican-Democrat, logic-emotion, and most importantly, humanity-Nature. In his chapter entitled "The Conservation Dilemma," Ehrenfeld (1978) explored the humanity-nature dichotomy, stating:

> the humanistic world accepts the conservation of Nature only piecemeal and at a price there must be a logical, practical reason for saving each and every part of the natural world we wish to preserve. (p. 177)

He discussed the concept of conservation, starting with the first person who put the word in common use, Gifford Pinchot, the founder of the U.S. Forest Service. Ehrenfeld believed that Pinchot's definition of resources is still the common definition in use today and could be paraphrased as "reserves of commodities that have an appreciable money value to people, either directly or indirectly" (1978, p. 178). Websters Dictionary (1988) defined "resource" as "a source of supply or support; a natural source of wealth or revenue; or `computable wealth'" (p. 1004). Ehrenfeld would suggest that these definitions, the "Conservation Movement," and the "resources" it tries to conserve, are based on a very anthropocentric concept of what is of value. According to Ehrenfeld (1978):

> A steadily increasing percentage of "conservationists" have been preoccupied with preservation of natural features-animal and plant species,communities of species, and entire ecological systems- that are not conventional resources, although they may not admit this. .

> . . Consequently, defenders of non-resources generally have attempted to secure protection for their "useless" species or environments by means of a change of designation a "value" is discovered, and the non-resource metamorphoses into a resource. (p. 178-179)

Perhaps the first to recognize this process was Aldo Leopold, who wrote in "The Land Ethic"(1966):

> One basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value. . . . When one of these non-economic categories is threatened, and if we happen to love it, we invent subterfuges to give it economic importance. (p. 246- 247)

Ehrenfeld (1978, p. 179-188) went on to list some of the economic values for non-resources, declaring that all are anthropocentric values and explaining the bases of his opinion. The anthropocentric values he listed include:

1. Recreational and aesthetic values
2. Undiscovered or undeveloped values
3. Ecosystem stabilization values
4. Value as examples of survival
5. Environmental baseline and monitoring values
6. Scientific research values
7. Teaching values
8. Habitat reconstruction values
9. Conservative valueavoidance of irreversible change

It is beyond the scope of this thesis to explain his rationale for each classification individually. However, the perspective is of value and the reader is encouraged to refer to Ehrenfeld. Ehrenfeld (1978) discussed the idea of "value" in general and declared that:

> . . . discovering value can be dangerous; in effect one surrenders all right to reject the humanist assumptions. . . . First, any competing use with a higher value, no matter how slight the differential, would be entitled priority . . . . Second, values change. . . . Third, the implication of the study is that both the valuable and the valueless qualities...are all known and identified. Conversely, this means that those qualities...that have not been assigned a conventional value are not very important. This is a dangerous assumption. Fourth, C.W. Clark has calculated that quick profits from immediate exploitation, even to the point of extinction of a resource, often are economically superior to long-term, sustained profits of the sort that might be generated by the intact resource...There is no true protection of Nature within the humanist system-the very idea is a contradiction in terms. . . . (underlines added) (p. 201-202)

With regard to his fourth point, many examples exist where government "conservation" organizations such as the U.S. Forest Service (USFS), Bureau of Land Management, Bureau of Reclamation, and Federal or State Fish and Wildlife Agencies have made decisions that benefit primarily certain exploitive industrial resource users, at the expense of the sustainability of the resource (or non- resource) or themselves with increased revenue for their bureaucratic processes.

In his dissenting opinion on the Mineral King Valley Case (Sierra Club v. Morton), Supreme Court Justice William O. Douglas stated that "The (U.S.) Forest Service has been notorious for its alignment with lumber companies, although its mandate from Congress directs it to consider the various aspects of multiple use in its supervision of the national forests (Stone,1988, p. 79). Stone (1988), commenting on Douglas's statement, added:

> The Forest Service, influenced by powerful logging interests, has, however, paid only lip service to its multiple use mandate and has auctioned away millions of timberland acres without considering environmental or conservational interests. (p. 79)

Senator Gale McGee (1971) complained that:

> The Forest Service's management policies are wreaking havoc with the environment. Soil is eroding, reforestation is neglected, if not ignored, streams are silting, and clearcutting remains a basic practice. (p.6b)

Since McGee's time, forest management practices have increased the use of clearcutting and the levels of cut in the 1980's have been steadily increasing. For example, between 1980 and 1987, there was a 49 percent increase in timber production in the states of California, Oregon and Washington (Diringer, 1989).

Although stronger environmental policy has been enacted since McGee and Stone first made their statements, there are countless recent examples of governmental resource agencies making decisions that some people consider counter to best interests of the American public, endangering the forest health, or not complying with the intent of environmental law. This can even go against agency mandates for management for "sustained yield," which itself might be a narrow and extremely anthropocentric concept.

According to Daniel (1988):

> Though strictly forbidden to do so under the National Forest Management Act of 1976, virtually every national forest in Washington and Oregon is selling timber above the sustained yield level--23 percent above, according to Forest Service data for twelve of the forests. (p. 5)

The Forest Service is not alone in exercising questionable methods and judgement. For example, the U.S. Fish and Wildlife Service (an "associate organizational sponsor" of Project WILD) was "blasted. . . by U.S. District Judge Thomas S. Zilly. . . for refusing to declare the (spotted) owl endangered." He found that the service had "disregarded all expert opinion. . . including its own expert, that the owl is facing extinction" (Diringer, 1989, p.8). According to a report by the investigative arm of Congress, the General Accounting Office (USGAO, 1989), 60 percent of the wildlife refuges managed by the U.S. Fish and Wildlife Service suffer from the effects of mining, logging, hunting, grazing, power boating and military exercises. The report indicates that on many refuges, the U.S. Fish and Wildlife Service allows wildlife to come "second" because of pressure from economic and recreational interests. To counter this problem, the report recommends that the agency base decisions solely on biological, rather than political, considerations.

If this anthropocentric value system is used without intending deception, it is a flawed tool because it may fail to consider the intrinsic value of Nature. It is also possible that this value system has been used as a "scientific" excuse to justify resource exploitation. For example, to define "old growth" forests in the Pacific Northwest so as to manage them, U.S. Forest Service scientists in a "old growth definition task force" came up with standards relating to tree size, type, density, etc. Proper use allowed for quantification of potential "resources." According to forest ecologist Peter Morrison (1988), these standards were not applied properly at the individual forest level. He felt that most definitions used fell far short of scientific accuracy. Using a wide range of definitions for their inventory of old growth, the individual forests came up with inflated estimates. For example, in the Mt. Baker-Snoqualmie complex in Washington state, the USFS came up with 667,000 acres of old growth. Using standards similar to the "task force" definitions, Morrison found only 297,000 acres. Similar major discrepancies were found in all six forests surveyed. The implications for over-estimation of the actual amount of remaining old growth are severe because the resource management ideology implies that the more old growth that is said to exist, the more that can be cut without impacting the resource. The advantage of doing this for the individual forest manager is by providing the most "cut," a manager has "done his job" most effectively and can therefore rise in the professional ranks. Morrison suggested, "It is really tragic to see the forest chopped up that bad. . . . When you see the plans for the next five years, it is going to look a lot worse." Forest Service biologists now believe Morrison's figures are the most accurate available (Dietrich, 1989).

Another critic of "Resource Conservation and Development" (RCD) policies, Jeff DeBonis, is an 11- year veteran timber sales planner with the U.S. Forest Service. He leads teams of scientists into the Cascade Mountains to study the soil, water and wildlife, and write the environmental analyses required by law before those forests can be cut down. He maintained:

> The Forest Service and the BLM are perceived by the conservation community as being advocates of the timber industry's agenda. Based on my 13 years of forestry, I believe this charge to be true. . . . We are overcutting our national forests at the expense of other resource values. We are incurring negative, cumulative impacts to our watershed, fisheries, wildlife and other non-commodity resources in our quest to meet our timber targets. . . . On every forest I have worked, I can give you numerous, on-the-ground examples of "getting the cut out" at the expense of other values. Examples include moving spotted owl habitat boundaries and allowing fragmentation of these areas to accommodate timber sales..,ignoring non-game wildlife prescriptions,etc. We rarely, if ever, exceed our objectives in non-timber resources, even though these objectives are set at the absolute minimum we can legally "get away with." ..these practices are so common place that they are the standard operating procedure. They are the norm and we scarcely think twice about them, until some concerned citizen or one of our own

> specialists dares to challenge us and we become indignant at their audacity. . . . (Stiak, 1989, p.1-10)

DeBonis's perspective has the support of at least 1000 U.S.F.S. employees and 2000 associate members who have joined his new organization dedicated to reforming the U.S.F.S. from within (Ford, 1990, p.1). The Region One (U.S.F.S) Forest Supervisors have written a letter to the chief of the U.S.F.S., expressing concerns similar to those of DeBonis and his organization, citing the "dysfunctional Forest Service family" where the U.S.F.S mission statement of being "conservation leaders" is not moving from "rhetoric to reality" ("An open letter..",1989). Although there has been considerable public and organizational notice of the controversies and the U.S.F.S. has made changes in its policy towards "old growth" forests, DeBonis claims that ". . . day to day operations aren't changing. So far it's all talk" (Ford, 1990, p.1).

According to Devall and Sessions (1984), within university education programs for future "resource managers," as well as within the agencies they will eventually serve, "there is little discussion or awareness of the philosophical assumptions underlying the anthropocentric resource ideology" (p. 296). Devall and Sessions suggest that within the RCD manager's educational and professional backgrounds, problems with the kind of management currently in use are perceived to be mainly technical or economic; The Dominant Western Paradigm philosophy which is the foundation of resource management ideology allows them to see themselves as "value-free" and beyond politics or philosophy in their "scientific" decisions. The U.S. Park Service, as well as the U.S. Forest Service, have increasingly been criticized for promoting what Edward Abbey (1988, p.60) called "Industrial Tourism," where an anthropocentric valuing system places an overriding emphasis on the development of natural areas for human enjoyment, convenience and comfort. This often leads to ecological and aesthetic degradation of the area which is justified in terms of meeting a "mandate" to provide for public demand and services. The equally strong mandate for protection of these areas is considered but often is outweighed by the bureaucratic desire to increase visitation and also justified with cost/benefit analyses which are sometimes misleading or inaccurate. High levels of visitation and development are often strongly supported by concessionaires who welcome a steady stream of tourists that "demand" or "expect" services like hotels, bars, stores and beauty salons. In a similar tradeoff of quality for quanity, the modern, scientific, RCD forester wants to eliminate old-growth natural forests as quickly as possible so as to "let the new forest grow" (Devall and Sessions, 1984, p. 296), often disregarding a probably irreparable loss of biologic and aesthetic quality while focusing on the quanity of timber production. Devall and Sessions suggest that environmentalists and their arguments are seen as special interest groups, while the "generally non-reflective" position of resource conservation and development professionals makes it almost impossible to discuss issues on a deeper philosophical level. They state:

> Basic philosophical differences tend to be obscured or deflected into discussions of technical issues. . . . The usual rhetoric of "conservation," "stewardship," and "wise use" in the contemporary version of RCD now means, in practice, the development of resources as quickly as technically possible with the available capital to serve human "needs.". . . This means altering nature to produce more or "better" commodities for human consumption and directing nature to do the bidding of humans on the utilitarian principle of "the greatest good for the greatest number of humans. . . . (Devall and Sessions, 1985, p. 134-136).

Regardless of the flaws inherent in this anthropocentric valuing system and whether it has been used honestly or with a very narrow interpretation of data, study boundaries, laws and other "facts," it appears to be in consistent use by government agencies. It has also been adopted by mainstream environmental organizations (some of which are "associate organizational sponsors" of Project WILD), with great success as the primary tool for winning environmental "battles."

This discussion is included here because the resource agencies that are in part responsible for the content of

Project WILD are presumably a product of the history and worldview that Ehrenfeld and others describe. Project WILD is a joint project of the Western Association of Fish and Wildlife Agencies and the Western Regional Environmental Education Council (WREEC), which is a "not-for-profit corporation comprised of representatives of the state departments of education and state resource agencies in 13 western states" (WREEC,1988, p. vii). Editorial control to "assure objectivity" (WREEC, 1988, p. ix) is maintained by WREEC and it is responsible for "materials and program development." The Western Association of Fish and Wildlife Agencies provides "technical expertise and program resources" (WREEC, 1988, p.viii). The U.S. Forest Service, a federal resource agency, is a "contributor" to Project WILD and provided "special personnel and materials assistance" (WREEC, 1988, p. 275). What Horwood, Ehrenfeld and others might question here is the ability of members of groups that display anthropocentric and humanist actions to provide an unbiased curricula. Considering the actions these organizations have taken which have resulted in harm to the environment, contributions to environmental and conservation curriculum could be considered highly suspect of having an extremely narrow view about what is "best" for non-human nature. For example, if the resource management profession is based on anthropocentric perspectives, resource managers might not recognize if they transmit anthropocentric assumptions to children when they provide "technical expertise." If their professional philosophy is based on this perspective, it might be questioned if they care if they transmit these assumptions about the world. It could be looked upon as an opportunity to spread the "resource management gospel" or to foster good public relations. There are no answers in this thesis, implied or otherwise, to these questions.

Ehrenfeld (1978) suggested that "humanists are fond of attacking religion for its untestable assumptions, but humanism contains untestable assumptions of its own. . . that are unconsciously assumed and rarely or never debated" (p. 16). This pseudo-religion is subscribed to at such a deep psychological level (as are most religions) that the assumptions and flaws go unrecognized by the practioner. In the case of Project WILD, the practioner is often a teacher, impressed by attractive and "free" teaching materials and probably not exposed to paradigm analysis or concepts such as "anthropocentrism."

Horwood (1987) suggested:

> the (anthropocentric) flaw is hard to find because materials are presented so attractively. The book is highly polished in both style and organization. The book is available only as a gift to teachers after they have participated in a full day workshop. The workshops are invariably energetic, informative and inspiring. It is hard to have a critical frame of mind towards exciting curriculum materials delivered in such an appealing way. (p. 2)

It is very likely that if an anthropocentric worldview is transmitted, it is transmitted through the writings and assumptions of its written literature, as in the case of other religions. In this case, it is not safe to assume that Project WILD has attained the unbiased viewpoint it claims, since resource management and educational professionals share responsibility for Project WILD have specific biases. Next, we can turn to the educational establishment in a continuing search for elements of humanism and the Dominant Western Paradigm.

Bias in the Educational Establishment

Sessions (1983) maintained:

> the educational establishment is itself now infected with the values and procedures of the technological paradigm, from the training of administrators and the rise of huge bureaucracies to the attempt to teach by the use of electronic gadgets and computers whenever possible. (p. 28)

The problem is this from a paradigmatic approach to intellectual and social development, knowledge is not "discovered" in an objective manner, nor is it intrinsically valid in an absolute sense (Bogen), rather, it is constructed within a context of societal beliefs and expectations and is generally governed by the dominant social ideology of the times (Gowin, 1981).

Skolimowski (1981) argued that the role of education is inextricably linked to the worldview and values of the society within which it functions "Education at once serves a given cosmology (or worldview) and articulates it" (p. 5). Sessions discussed Skolimowski's thesis in detail. He suggested:

> One might add that education exists to further the worldview and values of a particular social paradigm, but it can also serve to provide a critique of that paradigm and possibly suggest new paradigms, values, and ways of life when the old social paradigm has been shown to be out of touch with reality and genuine human needs. . . . Under the contemporary technological social paradigm, humans are the ultimate locus and arbiters of value in the universe; this worldview is dominated by a radical anthropocentricity. . . . Non-human nature is understood as but a commodity to be manipulated, dominated, managed, and controlled for the material, recreational, and aesthetic satisfaction of humans. . . . (Sessions, 1983, p. 28)

Bogen (1985) maintains that the degree to which our educational institutions "work very diligently" to instill and perpetuate the Dominant Western Paradigm becomes clear only when observed from the outside. There is a great struggle in education today. It struggles to maintain a balance between the social forces at work in individual communities (liberal vs. conservative political or social groups, resource exploitive vs. non-exploitive local economic base, etc.), state and federal jurisdictions and the mandate that government and church maintain separation. Bogen suggests that textbooks are "highly-edited and ideologically-influenced," looking for the "`lowest common denominator' of points-of-view so as not to be controversial." In other cases, Bogen noted that it is "plainly biased towards the dominant view" (1985, p. 153). The "religious right" wants a return to the Judeo-Christian paradigm, which is very anthropocentric (White, 1967), and has put pressure on the school systems to teach "creation science." "Religious right" fundamentalists complain about the "religion of secular humanism," which is taught in our schools. Ehrenfeld's work would maintain that there is validity in this claim.

"Mainstream" education not only takes many of the elements of the Dominant Western Paradigm into its own structure but seems to consider environmental education either irrelevent or threatening, as evidenced by extremely low levels of adoption into the curriculum (Jankowski,1975; Hooper,1985). While some aspects of environmental education might be considered different than the standard educational fare in that they promote a "New Environmental Paradigm" kind of awareness, a significant component of the field of environmental education could be unknowingly "stuck" with the rest of the educational establishment in the Dominant Western Paradigm, as evidenced by statements of its experts (and possibly by the emphasis on techno-scientific concepts, as explored in this thesis). However, environmental education also contains many elements of the New Environmental Paradigm (Bogen, 1985, p. 162). Bogen suggested that environmental education has the potential to clearly point the way towards a sustainable world if it can move beyond the constraints of the Dominant Western Paradigm. It is questionable if many environmental education teachers or proponents are aware of the implications and potential for DWP influence in their curricula. It is questionable if the teachers and resource managers who contributed to Project WILD were aware of the implications, characteristics or assumptions of a Dominant Western Paradigm worldview. By working within a system where the "hidden curriculum" is to perpetuate that worldview (Sessions, 1985; Bogen, 1985) and being a product of a Dominant Western Paradigm education themselves, they are unlikely to be qualified to recognize this worldview without themselves being further educated about it.

Regular reports in the media like "U.S. Education Too Basic" ("U.S. Education," 1989), "Many Think Sun Circles the Earth" ("Many think," 1988), or "Why Can't Johnny Think?" (Karp,1985) push the educational bureaucracy for the quick fix of more testing and raising the science, math and "critical thinking" requirements. Science and other "objective," socially and paradigmatically uncritical disciplines would be a tempting approach to emphasize in environmental education. Validation and adoption of science lessons in public schools might be easier than a socially critical approach.

The relatively high levels of funding and information sources for science-based curricula would be a tempting source of support. Paradigm-dependency and a lack of awareness of the problems associated with "value-free" science would give teachers no reason to take a more socially critical approach. By relying on a science emphasis, by choice or the reasons mentioned above, environmental education, in general, and Project WILD, in particular, would not tend to address deeper issues.

The Role of Science

> . . . Maybe the knowledge is too great, and maybe men are growing too small. . . . Maybe, kneeling down to atoms, they're becoming atom-sized in their souls. Maybe a specialist is only a coward, afraid to look out of his little cage. And think what the specialist misses--the whole world over his fence. (John Steinbeck, 1952, p.82)

Science has taken us on a quest for knowledge and understanding which has been very fruitful. Yet, according to Polanyi (1962), Berman (1984), and Capra (1985), science seldom questions some of the assumptions upon which it is based. Most scientists are not required to take a "philosophy of science" course in their academic careers and so they are not even offered the opportunity to question the historical or philosophical underpinnings of their discipline. One of the fundamental assumptions inherent in the scientific method is the ability to be objective.

Objectivity can be assured, according to scientific method, with independent replication and verification of experiments. What has been ignored is the paradigm dependency of the observer (Polanyi,1962; Kuhn,1970), implying that if both or all scientists perceive the world via the same paradigm, they are bound to ask similar questions, in the process, neglecting to ask many key questions. Similarly, they're likely to interpret what they see in fairly similar ways.

Karl Polanyi, Professor Emeritus of Chemistry at the University of Chicago, argued that attributing truth to any methodology, scientific or otherwise, is a non-rational commitment, an act of faith, an "affective" statement (1962). He demonstrated that most of the knowing we do is actually unconscious; he calls this "tact" or "personal knowledge." This learning happens while we are doing an activity, such as learning a language, riding a bicycle or studying chemistry. Awareness of the underlying rules is subliminal, picked up by osmosis (Berman, 1981, p. 176).

The scientific method discovers "laws" and "facts." However, according to Berman (1984), a historical analysis reveals that "the method, and thus the findings, constitute the ideological aspect of a social and economic process unique to early modern Europe" (p. 142). If knowledge is "situation bound," Berman (1984) argued:

> . . . we must separate ourselves from the common impression that it is some sort of absolute, transcultural truth. The implication is that there is no fixed reality, no underlying truth, but only relative truth, knowledge adequate to the circumstances that generated it. (p. 144)

According to Dr. Bill Devall (B. Devall, personal communication, August 28, 1989), sociology and other fields with "paradigm-dependancy" awareness have drastically changed their requirements for the "objective voice" in research. Null hypotheses are, to some degree, considered passe' because, though objectivity can be greatly enhanced with application of the scientific method, paradigm-dependancy cannot be compensated for. Therefore, it is now permissible for researchers in fields with "paradigm-dependancy" awareness to state their perspectives, starting assumptions, opinions and biases at the outset, and leave the reader to determine the validity of research methods, data or conclusions.

Polanyi (1962) refuted the positivist assumption that only in "proof" is knowledge to have value, and suggested that knowledge itself is almost always found to be "personal knowledge." Positivism is a philosophy which suggests "if it cannot be accurately and definitively measured, it is not true knowledge." Positivism is the basis of the philosophical argument used when "scientific uncertainty" is *employed to achieve political aims. For example, research* in the early-to-mid 1980's pointed to the seriousness of "environmental" problems as diverse as acid rain, the "Greenhouse effect," and the AIDS virus. In some cases, political action has been largely limited to gesturing and suggestions for "more studies" because some government scientists have not been "certain" that the problem is fully understood. A significant number of "unaligned" scientists, including many prominent government researchers, suggest that there was enough evidence in the early 1980's for serious action. There are even instances where government research, and the remedial actions suggested as a result of that research, has been suppressed by the administration in power because it did not support the administration's political agenda. Valuable time to take remedial action concerning global warming may have been wasted and many lives may have needlessly been lost to AIDS, possibly in part because of this rationale to avoid action. "Proof" is such a common demand in our Dominant Western Paradigm-based society that the statements in this paragraph might not be considered "valid" without documentation. Although it safe to presume that anyone who reads this paragraph could validate or refute the statements by reading the newspaper or doing a small amount of research, knowledge is often acceptable only if it conforms to certain "norms." The knowledge written in this paragraph is admittedly "personal knowledge," but that makes it no more or less valid than something written by an "expert." It is open to the research and verification of other humans. The purpose of this aberrant paragraph is to illustrate that personal knowledge is not acceptable in many situations, even though it may be more accurate, honest or "true" than, for example, the latest statistical "proof" that we are well on our way to eliminating the federal deficit. What should be noted is that positivism is inherent in many matters of validation as well as censure in the Dominant Western Paradigm, yet its assumptions and validity are rarely in question. Positivism is part of the paradigm of Western culture and is particularly noticeable in our educational and scientific communities.

There is an increasingly common situation where scientists working for one organization refute the studies of another "hired gun" scientist working for a group with opposing views. Scientists have been found to have such close ties with their organization and its funding source that they lose the ability to be as objective as paradigm-dependancy will allow. One of the major criticisms of Project WILD cited in "The Dangers of Project WILD" (HSUS, 1985) is the contention that wildlife population dynamics portrayed in a number of Project WILD activities were misleading. The scientists working for HSUS claimed that the research data used was not applicable to the animals in question and that which was applicable was often the "exception to the rule" and was used to rationalize "harvesting" the animals before they supposedly overpopulated their habitat and died of starvation. There is no judgement here as to who is correct, whether it be the scientist working for one of the government agencies that provided "technical support" for Project WILD or the scientist working for the Humane Society of the United States. However, it is clear that both funding organizations have an interest in Project WILD, an organizational "agenda" of their own to meet, and that one of the parties is not correct.

Scientists sometimes cross the line of professional ethics to the realm of criminal actions. For example, a recent focus of the television program "60 Minutes" (February 4, 1990) involved doctors and university research clinics that made claims about the health benefits of a drug called "Retin A." The program exposed the fact that all of the professionals involved were paid large sums of money by the manufacturer. The common (and questionable) link between the "objective" research community and industry occurred, where the company had provided the clinics the money for a number of major research programs, including the one in question. However, in this case, the doctors and researchers involved were clandestinely employed by the company and highly paid to do the public relations "bidding" for the company under the guise of "the objective doctor." Apparently this is a breach of both professional ethics and the law.

The accepted convention in most disciplines is to imply that there is no preconceived notion of what will be found in the mind of the researcher. However, paradigm-dependancy aside, many research projects are started to "prove" or "disprove" a theory or the validity of a claim. For example, the questionable research on the medicinal value of the drug Retin A was conducted to determine if "it worked." Even if there were no false claims or hidden allegiances involved, the doctors and researchers had reasons (continued financial support) to "find" that the drug produced certain benefits to the user. Similarly, the company that employed them had reasons to want doctors and scientists help them sell their product, namely, because a Dominant Western Paradigm culture, having implicit faith in science, might tend to believe people in white coats. The suggestion here is not that the scientific method or the majority of scientists using it are corrupt or do not merit respect. What should be noted is, contrary to the rules of conduct that "good science" demands, there is an increasing tendency for research to be funded by organizations with political or economic agendas to fulfill. In a very similar way to paradigm-dependant objectivity, some people perceive that science is increasingly "funding-dependant" and scientists might be encouraged to make assumptions and ask only the questions which will provide their funding source with the desired answers. The implication is that science cannot always be accepted at "face value" as having all the answers and, if it does have answers, they cannot be assumed to be correct. There is concern that our culture is unprepared to recognize this situation because of its paradigm-dependant faith in science and that vital political, economic and environmental decisions are made for them on the basis of these scientific studies.

Chase (1988) has criticized the tendency of the scientific community to compartmentalize its work and therefore miss the bigger picture. These are but a few of the criticisms of modern science.

Rappaport (1974) observed:

> Knowledge will never replace respect in man's dealings with ecological systems, for ecological systems in which man participates are likely to be so complex that he may never have sufficient comprehension of their content and structure to permit him to predict the outcome of many of his own acts. (p. 27)

LaChapelle (1972) explored ecological thinking, ways of learning and knowing, the structure of the mind, and provided some of the earliest Western writings on what would later be called Deep Ecology. According to Devall and Sessions (1985, p.95), she provided the intellectual justification for an awareness that most environmental organizations hesitated to admit, namely, that "all the `information' on acid rain and deforestation will not provide the experiential linkage necessary for damaged people to reconnect with the land."

Our educational system is a product of the dominant worldview of the society in which it is created. Up to this point, the word "worldview" has been used to describe the collection of values, beliefs, habits, and norms that form a frame of reference for a collectivity of people, such as a nation. The paradigm concept is very similar in that it involves models of thought or ways of seeing the world that are specific to a particular cultural or intellectual tradition (Bogen,1985). A deep analysis of paradigms is beyond the scope of this thesis and to some degree, the terms "paradigm" and "worldview" are used interchangeably in the literature as well as in this thesis. Our paradigm (the Dominant Western Paradigm) has been highly influenced by science, which strives to maintain a "value- free" and "objective" position. Due to the concerns of separating church and state as outlined in our constitution, as well as a tradition of holding personal freedoms in the highest regard, education concerning values and beliefs, other than political (democratic) ones, are not officially being taught in our schools. While science prides itself on being value-free, Devall and Sessions (1985) point out:

> We cannot conclude that contemporary education is ignoring values. Education is surely teaching values both explicitly and implicitly; it is teaching the worldview and values of the scientific/technological society. It is teaching by precept and example that values (and maybe facts as well) are all subjective and relative, that it is `rational' to compromise on all issues, and that nature exists as but a commodity to be enjoyed and consumed by humans. It teaches that there is a technological solution to all problems. (p. 181-182)

Capra (1982) explored in great detail the influence of the Cartesian-Newtonian worldview on our modern social systems and on both the "hard" sciences (medicine, biology, physics) and "soft" sciences (economics, sociology, psychology). He maintains that this primarily "mechanistic" worldview, while having been useful, is not in-step with the insights of modern physics, yet we cling to it. A "systems view" of life, that ". . . looks at the world in terms of relationships and integration" (Capra, 1982, p. 266) is a much more realistic approach, considering what we have learned about the world since the days of Descartes and Newton. In particular, the "Cartesian duality," the split between mind and body, subject and object, spirit and matter, value and fact, while essential to allow scientific methodology and discovery, has led us to a serious cultural imbalance. There is a "striking disparity between the development of intellectual power, scientific knowledge and technological skills on one hand, and wisdom, spirituality and ethics on the other" (Capra, 1982, p. 25). Capra (1982) suggested that "most academics subscribe to narrow perceptions of reality which are inadequate for dealing with the major problems of our time" (p. 25).

The influence of Descartes has had great utility in understanding natural phenomena, and all scientists are indebted to his insights. But from the present day, we can discern some limitations of his philosophy. One is that Descartes maintained that quantitative analysis is the superior mode of thinking when studying natural processes. When dealing with human experience, however, this creates problems. The result of this can be noted strongly in the social sciences. Behaviorist theory has gone so far as to assume that consciousness is not thought to really exist at all because it does not lend itself to quantification at the present time (Capra, 1982, p. 375).

Skinner (1953) believed that all phenomena associated with human consciousness, such as mind or ideas, are non-existing entities ". . . invented to provide spurious explanations. . . . Since mental or psychic events are asserted to lack the dimensions of physical science, we have an additional reason for rejecting them" (p. 30-31). Skinner suggested that solutions to our current crises will not be found in the evolution of consciousness, because there is no such thing, nor through a change in values because values are nothing but positive and negative reinforcement, rather through scientific control of human behavior (Capra 1982).

The danger in this mechanistic view of the world and of humans becomes clearer when we consider environmental problems. The root of these problems stem from the mind, ideas, wants, needs and fears of modern humanity. Physical science does not provide more than short-term answers to these problems. Some aspects of modern social science and their ideas of "scientific control" suggests that we can manipulate people to behave in a certain way. Although this may be true, it may not be desirable. We have been unable to manipulate even the physical world with predictable results. Even when we have been able to accurately predict the result, the ramifications of our action have often not been predicted. A number of yesterday's technological answers to our needs have resulted in today's problems, which in turn demand a new technological solution. For example, it was claimed that nuclear energy was going to provide unlimited "clean" energy. We now recognize that it is not "clean" but we still use it, produce dangerous byproducts and hope for breakthroughs in "safe" containment technology. Similarly, in looking for a techno-fix for our problems through psychological manipulation of humans, our results could be just as unanticipated as our problems with nuclear waste. Instead of allowing and encouraging humans to expand their understanding of the world and consciousness (as has naturally been the case since the beginnings of humanity) to include protection of the planet and all living things, we would tend to apply a "techno-fix." In doing so, an assumption is made that the "technicians" will keep our best interests in mind and not be swayed by economic or political expediency. This is a questionable assumption.

Looking further into the philosophical roots of science, it is possible that Descartes's view of science considered scientific thinking as being the true source of all knowledge:

> All science is certain, evident knowledge. . . . We reject all knowledge which is merely probable and judge that only those things should be believed which are perfectly known and about which there can be no doubts (quoted in Garber, 1978, p.12).

Bogen (1985) suggests that the idea that scientific knowledge truly represents absolute truth and correctly defines the whole of reality is:

> . . . . one of the most pervasive and damaging of all ideas that comprise our dominant paradigm. It has spread throughout our culture and seems to be accepted unthinkingly by large numbers of people in our society. (p. 72)

Much of modern day science subscribes to the Cartesian-Newtonian worldview (Capra,1982), yet most of what we call "knowledge" today, often the result of statistical analyses and probabilities, could not fit into Descartes's definition. Still, the belief in the truth of science has been perpetuated by scientists and lay people ever since, despite conflicting views from modern physics (Capra, 1975) and the time-dependent nature of all research claims throughout the history of science (Kuhn, 1970).

Kuhn (1970) held that both the thought and action of a scientific community are dominated by its paradigms. He suggested that the paradigm is reflected in standard examples of scientific work which embody a set of conceptual, methodological and metaphysical assumptions. He maintained that both observations and criteria for observation are paradigm-dependent. Barbour (1974), in a comparative study of science and religion, explored Kuhn's ideas (and their critics), and compared the paradigms of science with those of religion.

He concluded :

> . . . science is not as objective, nor religion as subjective, as the dominant view among philosophers. . . . Data are theory-laden; comprehensive theories are resistant to falsification; and there are no rules for paradigm choice.(Barbour, 1974, p. 171)

Sterling (1985) took the work of Capra and others and applies it to environmental problems. He concluded that the Western scientific worldview is no longer a sufficient model of reality and that our contemporary ecological crisis is "at heart, a cultural one" (Sterling, 1985, p. 199). He argued that we need to examine the roots of our cultural worldview if we are to understand our problems and that "calls for a `new ethic' are likely to be ineffectual in the absence of a challenge to the damaging dichotomy between fact and value that characterizes our culture" (Sterling, 1985, p. 197).

All the work cited thus far gives a general outline and critique of the paradigm or worldview we, as a culture, subscribe to; it also highlights the role of science in that paradigm. Bogen (1985) explored the concepts of paradigm and paradigm shifts with regard to environmental education. He, like Sterling, suggested that the history of Western thought, and the Dominant Western Paradigm, which is the result of this progression of thought, presents a cyclic pattern of change that helps to put current environmental problems into perspective. Bogen, and others, suggested that this dominant paradigm is at the root of some of the problems that environmental education attempts to educate about. A "New Ecological Paradigm" has been suggested as a useful foundation from which to reconceptualize the foundations and goals of environmental education to better meet the aims of the field. Bogen indicated that education as a whole tends to be biased towards the "increasingly dysfunctional values" of Dominant Western Paradigm. However, he suggested that an ecological analysis of the world situation illustrates the "systemic nature of the inadequacies of that paradigm and the institutions it helped create" (Bogen, 1985, p. 153). Bogen suggested that while environmental education does vaguely pose a challenge to the Dominant Western Paradigm and conventional education, the "top-down approaches" to implementation (e.g., the Environmental Education Act of 1970) left the field of environmental education "mired in an institutional inability to respond in the holistic manner required." In Bogen's opinion, this problem has added to contradictions and confusion regarding the stated goals and actual goals of EE. He also suggested that the contradictions of a field with historical roots in both a Dominant Western Paradigm biased "conservation education" and the social and intellectual movements of the 1960's, which were beginning to point to a "New Ecological Paradigm," has helped to create some of the lack of consensus as to just what environmental education is and what its goals, objectives and teaching approach (e.g., cognitive vs. affective) should be.

In an analysis of the philosophical foundations of environmental education, Bogen cited Harvey's (1976) summary of statements regarding goals, definitions and foundations of environmental education presented in the writings of environmental education "spokespersons." He concluded that it is likely that Harvey and others, in making these statements, did not realize that the ideas and concepts put forth were derived from the Dominant Western Paradigm and served to put environmental education in the role of perpetuating that paradigm rather than redirecting the dominant culture. He suggested that the statements were often "ecologically-metaphorical" yet still supported the status quo.

Bogen (1985) stated:

> In the context of environmental education theory and practice, the reformist attitude within an adherence to the Dominant Western Paradigm is quite evident in the literature of the field, and presumably in the minds of some environmental education practitioners. . . . The predominance of overly-quantitative, reductionistic analyses combined with generally behaviorist psychological approaches in environmental education research literature is clear evidence. . . Another characteristic of environmental education research (indicating a Dominant Western Paradigm perspective) is the tendency towards isolation and compartmentalization... (which) manifests itself in how its own "experts" define the field and the content subsumed under it (e.g., Roth,1970; Harvey,1976; Hart,1981; Townsend,1982). (p.161-162)

Bogen concluded that despite its shortcomings, environmental education has many qualities and potentials essential to redirecting a Dominant Western Paradigm based culture towards a new paradigm.

Techno-Scientific Paradigm in Environmental Education

It is clear that a strong reliance on the "rationality" and "objectivity" of science is questionable. An over-reliance on science in environmental education would be indicated by the predominance of scientific concept transmission or use of materials which have a "management tendency." If environmental education, in general, and Project WILD, in particular, are found to have an over-reliance on science, it is possible that education for new ways of living in the world has been tainted. Science does not deal with what some people consider the roots of our environmental problems, namely, our ethical relationship with nature, as well as our social and political value systems which perpetuate environmental degradation. It could be argued that science is so much a part of the Dominant Western Paradigm and that beliefs within the DWP about the omnipotence of science are so strong, that science might tend to strongly support the status quo. There might be too little opportunity for students to move outside the confines of the Dominant Western Paradigm and begin to ask some new questions about themselves and the world they would like to inherit.

Robottom (1985) suggested that there is a major contestation occurring in environmental education. Contestation is "a process in which self-interested individuals and groups in a social organization cooperate, compete and negotiate in a complex interaction aimed at solving social problems" (Robottom, 1985, p. 1-3). His thesis argued that contestation takes place in the domains of:

(a) language and policy in environmental education;

(b) organizational strategies aimed at initiating or improving environmental education and,

(c) educational practices conducted in the name of environmental education.

He also argued that contestation takes place within perspectives between these domains. Robottom further suggested that technicist models of innovation are dominant in the organization of environmental education. He stated:

> . . . they are part of a hegemonic relationship which acts to "technologise" the innovation they provide an organizational strategy for establishing environmental and educational progress without offering a theory for self-reflection and ideology-critique. The incompatibility of certain contesting perspectives and practices is masked, thus contributing to continuity rather than reform. (1985, p. 1-3)

Robottom (1985, p. 484-485) suggested that an "educational problem of environmental education" exists because of the incompatibility of the technicist (or techno-scientific) approach and those grounded in critical social and political analysis. He described the "educational problem" as one where environmental education language at the international level is socially-critical, favoring education for the environment, while at the local school level, it is not socially critical and in fact favors education about and in the environment.

Education for the environment would tend to emphasize an advocacy for the environment. This would necessitate a critical examination of social, political and economic systems to determine if they are compatible with sustainable environmental health as well as human happiness within that environment. If they were not, action would be encouraged to institute systems that did promote environmental balance. This would involve value judgements and decisions which are hard to quantify and are therefore suspect in a techno-scientificlly based paradigm. In contrast, education in and about the environment is more "value-free" and would not necessitate more than being outdoors while learning and learning "value-free" science concepts and theories about how the natural world functions. Education in and about the environment does not require an advocacy for the environment, wouldn't necessitate critical examination of social, political and economic systems, and wouldn't necessitate action to install environmentally sensitive systems. Robottom suggested that because EE is organized with a built-in dissonance between education for the environment and education in and about the environment, it actually tends to maintain the status quo (even though it seems to have a reformist zeal). "Educational continuity (is) espoused as an educational reform. . . a rhetoric/reality gap" (Robottom, 1985, p. 485). He concluded that of "several contesting forms of educational research that offers the most coherent response to the educational problem of education, an approach grounded in the critical social sciences are both the best justified and most promising approaches" (Robottom, 1985, p. 1-3).

Disinger and Bousquet (1982) suggested that there are uneven levels of commitment to environmental education by state education agencies, finding that, in many cases, "those staff members have other assignments which are, in fact, their `real jobs'" (Disinger and Bousquet, 1982, p. 21-22). They found that the most common pattern of assignment of environmental education responsibility is as an additional duty, or set of duties, for science education staff. They concluded that a majority of those serving as environmental education coordinators have academic backgrounds in science and/or science education and suggest "It is clear that state education agencies frequently treat environmental education as an adjunct of science education" (Disinger and Bousquet, 1982, p. 21-22).

Swan (1978) maintained that many aspects of environmental education are keyed toward science. However, in suggesting a rationale for expanding the scope of EE, he stated:

> In this day and age, isn't science really a form of religion? It provides a framework of beliefs about the way the world works which is highly respected by most people and to a large extent shapes personal worldviews

> about the nature of birth, death and life itself. (Swan, 1978, p. 46)

He suggested that the conventional educational system has tried to avoid religious involvement, leaving it to the parochial schools, yet that division is now less clear-cut with the introduction of values programs into the schools. He made an excellent point about the place of a "religious" perspective in environmental education when he stated:

> Environmental educators are asking people to live in greater harmony with nature. What science can tell us ultimately is how does nature work. Harmony, however, is based upon sympathetic understanding and only partially upon rational, logical deductive understanding. Spiritual studies on the other hand have for centuries asserted that health, meaning and purpose can only be achieved when people can align themselves with nature and then develop their minds. (Swan, 1978, p. 46)

Horwood (1989) suggested that "spiritual dimensions can be taught at an effective yet simple level without offending established religious dogmas and sensitivities" (p.5). He believed that adding intellectual and technological content to the curriculum has failed and to appeal to science to "repair damage done by misapplied past technology" is doomed to failure if people's worldview and attitudes don't change. He noted:

> . . . it could make a difference to pay attention to the spiritual domain because it drives most of our actions. People act out of their deepest convictions and feelings far more than out of intellectual knowledge. It is no accident that the words "motive", "motion", and "emotion" all have the same root.(Bogen, 1989, p.3)

The American Association for Health, Physical Education and Recreation (AAHPER) study environmental education in the public schools of 1970 noted that environmental education was taught primarily in the sciences and applied sciences.

Deep Ecology

This critique of environmental education, in general, and Project WILD, in particular, is based and inspired to a great extent on a contemporary school of thought known as Deep Ecology. Deep Ecology is a reference point which will be used in this thesis to explore the questions and issues that are at the root of our environmental crisis. Deep Ecology, as outlined by Naess (1973), Devall and Sessions (1985), and others, is a perspective which doubts that the questions that are vital for the survival of a healthy environment are being asked. According to Naess (1973), "The essence of Deep Ecology is to keep asking more searching questions about human life, society, and Nature as in the Western philosophical tradition of Socrates" (Devall and Sessions (1985).

Naess (1982) points out:

> The adjective "deep" stresses that we ask why and how, where others do not. For instance, ecology as a science does not ask what kind of society would be best for maintaining a particular ecosystem - that is considered a question for value theory, for politics, for ethics. As long as ecologists keep narrowly to their science, they do not ask such questions. . . .

> Deep Ecology, then, involves a shift from science to wisdom. For example, we need to ask questions like, "Why do you think that economic growth and high levels of consumption are so important?". . . We ask whether the present society fulfills basic human needs like love and security and access to nature, and in so doing, we question our societies underlying assumptions. (Devall and Sessions, 1985, p.74)

Basic Principles of Deep Ecology, as outlined in Devall and Sessions (1985, p. 70) included these eight points:

> 1. The well-being and flourishing of human and non-human Life on Earth have value in themselves (synonyms intrinsic value, inherent value). These values are independent of the usefulness of the non-human world for human purposes.
> 2. Richness and diversity of lifeforms contribute to the realization of these values and are also values in themselves.
> 3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
> 4. The flourishing of human life and cultures is compatible with a substantial decrease in human population. The flourishing of non-human life requires such a decrease.
> 5. Present human interference with the non-human world is excessive, and the situation is rapidly worsening.
> 6. Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
> 7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be profound awareness of the difference between big and great.
> 8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try and implement the necessary changes.

Devall and Sessions encouraged readers to formulate their own deep ecological perspective and to think through the consequences of acting on these principles.

Deep Ecology is used as a reference point in this thesis because it provides a coherent compilation of much of the critique of the anthropocentric, techno-scientific, Dominant Social Paradigm. It has also helped to crystalize a New Ecological Paradigm (and a set of ethics towards the rest of nature) around basic, action-oriented principles. There is a distinct difference between environmental ethics and philosophy and Deep Ecology. Environmental ethics and philosophy, as taught in academic institutions, focuses on theoretical relationships and structures of justification and argument. In contrast, the writings of Deep Ecologists first serve to illustrate the contradictions of our recent past and present, and then suggest that we reunite our spirit/Self and work for the benefit of all beings as we would ourselves because they really are part of us and we are part of them. Deep Ecology is separated from a discussion of environmental ethics because Deep Ecology is a broader-based approach that outlines and encourages a new ethic but it is also popularly known amongst non-philosophers and non-academics. The field of environmental ethics has been the origin of many critical examinations of the human relationship to the natural world, for example, the "animal rights" arguments. However, it is a formal discipline with academic departments at major universities and relies on the language and logical techniques of philosophy.

Deep Ecology is, in contrast, a popular movement and philosophy which has drawn extensively on environmental ethics but provides unique contributions of its own. As interpreted by Devall and Sessions (1985), it is an eclectic compilation of many different fields, authors and perspectives. Deep Ecology draws from Eastern spiritual philosophy, environmental history and philosophy, the history and philosophy of science and the history and philosophy of the "conservation movement" to help readers understand the present and claim their own vision for the future. It encourages humans to set aside the false matter/spirit dichotomy and to allow themselves the experience of their unity with all life.

According to Devall and Sessions (1985), Naess coined the term "Deep Ecology" as he was "attempting to describe the deeper, more spiritual approach to Nature exemplified in the writings of Aldo Leopold and Rachel Carson" (p.65). Naess recognized that all perspectives have a philosophical basis, at the heart of which lies ultimate norms or principles that cannot be derived from other norms or principles. Quoted in Devall and Sessions (1985), Naess stated:

> . . . Aristotle said, it shows a lack of education to try and prove everything, because you have to have a starting point. You can't prove the methodology of science, you can't prove logic, because logic presupposes fundamental premises . . .All sciences are fragmentary and incomplete in relation to basic rules and norms, so it is very shallow to think that science

> can solve our problems. Without basic norms, there is no science. (Devall and Sessions, 1985, p 75)

Naess recognized that the dominant approach to understanding our environmental problems and the human role in the ecosystem was severely limited by an inability or unwillingness on the part of modern, Western humans to examine the philosophical assumptions of their Western sciences and societies. Naess explored the limitations of the Western worldview and used the insights of Leopold and Carson to point towards a new philosophical basis. These "ultimate norms" are arrived at by deep philosophical questioning and, according to Devall and Sessions (1985), ". . . they cannot be validated by the methodology of modern science based on its usual mechanistic assumptions and its very narrow definition of data" (p.66).

An emphasis on direct experience, not just intellectual contemplation, is at the heart of the first of Deep Ecology's two "ultimate norms," self-realization and biocentric equality. Self-realization refers to extension of the narrow ego boundaries of Western humans to include identification with other humans and the non-human world. Berman (1984, p.147-157) believed that there was a major constriction of ego boundaries during the Scientific Revolution and that the alienation of humans from each other and their environment has accentuated since then. There may have been benefits to this shift in perception. However, the constriction of ego boundaries is likely to have outlived being useful and in need of adjustment in an age when the "subversive" science of ecology suggests the total interdependence of all humans and all other species for survival. Self-realization encourages us to " . . . see beyond our narrow contemporary cultural assumptions and values. . ." using ". . .meditative deep questioning . . ." to recognize our ". . . full mature personhood and uniqueness. . . ." as well as a larger "Self" inclusive of other beings (Devall and Sessions, 1985, p.67). They summarized this awareness with the phrase:

> "No one is saved until we are all saved," where the phrase "one" includes not only me, an individual human, but all humans, whales, grizzly bears, whole rain forest ecosystems, mountains and rivers, the tiniest microbes in the soil, and so on. (Devall and Sessions, 1985, p.67)

The second ultimate norm of Deep Ecology is Biocentric Equality. Devall and Sessions (1985) suggested:

> The basic intuition (of biocentric equality) is that all organisms and entities in the ecosphere, as parts of the interrelated whole, are equal in intrinsic worth. . . . Aldo Leopold expressed this intuition when he said that humans are "plain citizens" of the biotic community, not lord and master over all other species. (p. 67-68)

The treatment of Deep Ecology in this thesis is limited. The focus is not on what Deep Ecology is or is not. The focus is to use the insights of Deep Ecology and to share enough of the perspective of Deep Ecology to allow readers to follow its use in the search for a new perspective on environmental education. Any discussion of Deep Ecology, per se, is intended to inform, not to fully educate the reader. A personal exploration and use of Deep Ecology is encouraged.

A key element of Deep Ecology is the call to "action" in all spheres of influence personal, political and social. Devall (1988) provided a guideline for action that is more extensive than Devall and Sessions (1985). He also quoted Naess on common reasons "experts" and academic professionals are often private supporters of Deep Ecology but maintain public silence (Devall, 1988, p. 95). As a school of action and philosophical thought, as well as a way of living, Deep Ecology has many supporters. Although it demands a strong critique of the techno-scientific/ Dominant Western paradigm, it has, on occasion, been noticed and validated in the scientific community. Golley (1987) examined it from the perspective of scientific ecology. He suggested that Deep Ecology's central norms of "self-realization and bio-centricity" can be interpreted and supported by scientific ecology. He suggested that there is no contradiction between the fields of Deep Ecology and scientific ecology. It should be noted, however, that Devall and Sessions (1985) called modern scientific ecology "shallow ecology" because they considered it narrow and reductionistic and they were not concerned if modern science can validate Deep Ecology using what they considered limited techniques. Capra (1985) suggested that Deep Ecology is supported by modern science and added:

> It is rooted in a perception of reality that goes beyond the scientific framework to an intuitive awareness of the oneness of all life. . . . When the concept of the human spirit is understood in this sense, as the mode of consciousness in which the individual feels connected to the cosmos as a whole, it becomes clear that ecological awareness is truely spiritual. Indeed, the idea of the individual being linked to the cosmos is expressed in the Latin root of the work religion, "religare" ("to bind strongly"), as well as in the Sanskrit "yoga," which means union. (p. 412)

Deep Ecology does have its critics. Watson (1983) labeled Deep Ecology as "anti human," unreasonable, and non-egalitarian because it "sets man apart." He extended his earlier anti-biocentric view that most of non-human nature deserves to have no rights or intrinsic value due to lack of the ability to reciprocate those rights (Watson, 1979). "Eco-feminists" suggested that Deep Ecology is not "deep enough" because it has neglected the crucial role played by patriarchialism in shaping the cultural categories responsible for Western humanities domination of nature (Salleh, 1984; Zimmerman, 1987). Skolimowski (1988) came to a similar conclusion because it has no eschatology, the philosophical doctrine concerning ultimate ends. The purpose of this thesis is not to explore that controversy nor is it designed to dissect and analyze Deep Ecology. Deep Ecology has a perspective worth giving attention to, as evidenced by the number of strong supporters and the smaller but quite vocal number of critics. And while the influence of Deep Ecology and its authors has been strong, the reader is again encouraged to explore the original texts for a greater understanding of what Deep Ecology is and is not.

Besides the quest for self-realization and biocentric perspective advocated by authors previously cited, Deep Ecology points to other important activities that an environmental education curriculum should provide. Some suggestions have been formulated by this author and will appear in Chapter Five.

However, as a general guideline, Bill Devall suggested:

> Teaching Deep Ecology, and environmental education from a Deep Ecological perspective, is not aimed at persuading the student but allowing the student to experience his or her own ecological self--creating a safe place so the student can be vulnerable and open to insights from his or her own experience (B. Devall, personal communication, November 16, 1988).

Although Devall suggested that the major source of ecological wisdom comes from within, there are things which are taught or proscribed in all societies, as illustrated earlier in examining the explicit and implicit messages contained in the Dominant Western Paradigm. Of primary consideration here is our ethical and moral relationship with the rest of nature. It is the consideration of a new environmental ethic which Aldo Leopold, who has been called "the father of modern ecology," pondered and then championed. Along with Deep Ecology, the study of environmental ethics has been a primary source of a philosophical foundation and rationale for this study.

Environmental Ethics

Environmental ethics concerns the ethical relationships between humans and the natural world. It has been a distinct scholarly activity for over fifteen years, and the research and debate has been intense. This topic is of interest in the field of environmental education because the lack of ethics towards non-human nature has been cited as a source of environmental problems (Leopold, 1966). Ethics have been traditionally restricted in Western philosophy and theology to human-human and human-God relationships. Human technological capabilities to alter our planet have far surpassed our code of ethics towards it and the other life forms that share it. As environmental problems became more acute in the mid-1960's, engineering solutions were first applied. It was soon recognized that "what was needed to `solve' environmental problems was not new technology so much as a new environmental ethic" (Callicott, 1980, p. 382).

Leopold (1966) suggested:

> We are remodeling the Alhambra with a steam shovel, and we are proud of our yardage. We shall hardly relinquish the shovel, which after all has many good points, but we are in need of gentler and more objective criteria for its successful use. (p. 412)

Our laws, based in part on an anthropocentric set of religious prescriptions (e.g., "the ten commandments"), are only beginning to consider the intrinsic value of other species. Rolston (1987) suggested, "There is something morally naive about living in a reference frame where one species takes itself as absolute and values everything else relative to its utility" (p. 32). Today, humans hold the fate of most species in their hands. Technology gives us short-term dominance, but there might not be long-term survival of many species unless we value the ecosystem itself, in all its complexity. There is little consensus on exactly where the line of value can and should be drawn, except that it has been drawn too narrowly in the past. A brief historical and intellectual overview of the field follows.

A Brief Western History

Roderick Nash, in his recent book "The Rights of Nature" (1989), chronicled the history of environmental ethics and the central concept that "morality ought to include the relationship of humans to nature." An "evolution" of ethics is argued, starting with the pre-ethical concern for "self," and broadening into the "ethical past" to include family, tribe and region. Presently we have extended this to the categories of nation, race, and humans. Only recently have we begun to explore an ethical relationship with animals, plants or non-living things.

Nash argued the extension of ethics is a "rounding out" of the American Revolution by extending rights to wider and wider circles of beings. He traced an expanding concept of "rights," moving from the extension of rights first to English barons with the Magna Carta in 1215 A.D., to American Colonists in 1776, slaves (Emancipation Proclamation) in 1863, Women with the Nineteenth Amendment in 1920, Blacks with the Civil Rights Act of 1957, and finally Nature in the Endangered Species Act of 1973. He suggested such ideas have always been at the "far frontier of moral theory" and new ideas are often met with resistance. The Spotted Owl controversy is a contemporary example; as the Endangered Species Act aims to protect the Spotted Owl and other "Old Growth" dependent species at the expense of being able to harvest the remaining trees, the timber industry is beginning to provide organized resistance to protecting the owl. Here, the far frontier is found in the legal mandate extending certain "rights to life" for species, not individual animals. The physical frontier is gone in America. However, on the new frontier, humans who see the forests anthropocentrically, as human resources, clash violently with those who have crossed the line towards biocentric concerns and management.

Nash (1989) stated:

> . . . while the majority still regard this idea (that non-human life and non-living matter have moral standing) as incredible. . . historians are aware that the same incredulity met the first proposals granting independence to American colonists, freeing the slaves,. . . . (p. 5-7)

Nash, like Darwin and Leopold, suggested that ethics evolve naturally to include broader and broader definitions of community. Nash maintained this extension of ethical boundaries is a long-standing American tradition, reflected in the revolutionary extensions of legal rights to new classes of humans. He suggested the further extension of rights beyond the species boundary is a natural result of this American liberal tradition. His final chapters argued that some of the groups that are now considered "radical," such as those dedicated to "liberating" animals (e.g., Animal Liberation Front) or Nature itself (e.g. Earth First!) are no more radical for their time than the abolitionists were one hundred and fifty years ago. Nash (1989) stated, "It is easy to judge their chances for changing traditional attitudes and institutions as poor to non-existent. History, however, provides another perspective" (p. 200). Nash and others found a number of historical analogies between abolitionist activities and these modern liberation movements. Nash maintained "exploitation of almost four million blacks underlay the prosperity and luxury of Southern life in the same way the exploitation of other species and of the environment underwrote and continues to underwrite American affluence."

Nash (1989, p. 200) quoted Ryder:

> When we examine the arguments used by slave-owners in the past, we can see a striking similarity with the view expressed today by those who defend the exploitation of animals in factory-farms, the fur trade, [and] laboratories. . . above all else, it would be stressed [that animal] slavery was necessary for economic survival. (Ryder, 1975, p. 12)

Nash suggested the abolitionist and radical environmentalist would both agree that meaningful reform can only come when the relationship between slave and slaveowner or humans and non-humans is changed from an economic to an ethical one. Benevolent or humane treatment is not enough.

Nash (1989) wrote:

> When it did occur, humane treatment of slaves seldom reflected an ethical sensibility. It was good business, like skillful utilitarian management of livestock or good stewardship of fields. The new environmentalists who believe in the rights of nature dismiss conservation and stewardship as ethically meaningless, just as abolitionists scorned kindly slavery. What the deep ecologists call "reform environmentalism" or "shallow ecology" seems to them just a more efficient form of exploitation and oppression. It compares to feeding the slaves well or to buying women new dresses while refusing them the right to vote. Real reform, the radical environmentalists agree with the abolitionists, depends on replacing the entire exploitative system with one premised on the rights of the oppressed minority. (p. 202)

Nash drew other analogies, linking the abolitionist and radical environmentalist positions regarding:

(1) the fallacies of ethical inequality based on biological inequality (inferiority),

(2) strong ethical convictions,

(3) the problems of changing deeply rooted institutions in their society,

(4) the ethical problems of ownership and private property, and

(5) the four procedures they used in their "crusades" (reform, ethical education, separation of people who act ethically from those who do not, and coercion).

He maintained slavery was not legislated out of existence. Nash believed that although education and separation were valuable and gained the attention of some people, the only effective alternative for the American antislavery movement was coercion.

> If institutions could not be changed legally through reform efforts, if ethical education did not persuade the South to abandon slaveholding, and if insufficient support could be found for succession of the free states, the only way to right a moral wrong was by force. The South would have to be made to give up slavery.(Nash, 1989, p. 209)

Nash concluded that increased popular support for the ethical treatment of non-human nature is a distinct possibility. In that case, he believed some who derive substantial material benefits from their "limited ethics" will not voluntarily abandon their beliefs and behavior no matter how vigorously radical environmentalists insist; therefore, domestic tranquility might again be endangered.

Ethics, Rights and the Western Legal Tradition

Ethics and moral codes, rooted in theology and philosophy, have always been the basis for legal codes. Stone (1972,1988) presented a ground-breaking legal opinion in which he argued for extension of rights to non-humans, in particular, trees. This is possibly the first time our legal system has been encouraged to look deeply at anthropocentric assumptions. Stone wrote as the Mineral King Valley Case was before the Supreme Court (Sierra Club v. Morton). As a way of affecting opinion, Stone (like Nash) chronicled how throughout history, each successive extension of rights to some new entity has been considered "a bit unthinkable" (1988, p. 6). He started with Darwin's ideas (1874) on the extension of ethics as a natural trend and suggests the history of law shows a parallel development. Most cases suggest that prior to being given greater consideration, an entity is considered without rights because that is how Nature intended it, not because of legal action to maintain the status quo. Humans of Chinese descent were, in the eyes of the highest court in nineteenth century California, "a race of people whom nature has marked as inferior, and who are incapable of progress or intellectual development beyond a certain point" (Stone, 1988, p. 7). They, therefore, did not have the right to testify against whites. Stone described how Jews and even women have been treated in a way many people in contemporary America would consider outrageous. In proposing that non-humans and even the environment as a whole be granted rights, he suggested something equally outrageous. He maintained "human chauvinism" is to some degree just an extension of our treatment of other entities we have ignorantly considered "inferior" and an extension of rights to non-humans will have positive legal, psychic and socio-psychic benefits. However, the implications of an extension of rights are not without problems.

Two generic problems with a direct extension of rights are raised. First, if we extend individual rights to include everyone and everything, in effect we create a situation in which nothing will have rights. For example, if all living things have a right to live their lives unhindered, most animals would be violating the rights of other beings because all animals must kill and eat to survive (unless they are detritus feeders, and then even they will kill microorganisms). A second problem is a cross-cultural one:"rights" are a Judeo-Christian/Western concept. Because our problems are global, this concept would not be useful in many parts of the world unless the governments adopt a code of civil rights, at least towards humans. Western civilization is the center of scientific innovation and political power in the late 1900's and therefore, some people might suggest the world should base environmental ethics on Western concepts. However, the earlier sections of Chapter Two of this thesis highlight some of the limitations of the contemporary Western worldview. To suggest rights are "the answer" might be culturally chauvinistic, and needlessly restrict the solution of global problems to Western ideals. This could meet resistance from peoples who have no tradition or experience with this idea. A cross-cultural perspective on human/non-human ethical relationships is preferable. However, the legal extension of rights is a secondary consideration. While "rights" are useful in societies guaranteeing civil rights, philosophical and ethical attitudes towards non-human nature are what determine laws and are also the basis of individual human inspiration towards ethical behavior. Humans may not always act according to the ethical norms of their culture, but these are the standards from which they can choose to follow or deviate. In a survey of ethics, the most important dichotomy for the purpose of this thesis is anthropocentric ethics vs. non-anthropocentric ethics.

Anthropocentric versus Non-Anthropocentric Ethics

Drengson (1988, p. xi) suggested that developing an environmental ethic was a preoccupation of early environmental philosophers in the late 1960's and early 1970's. Their first approach was to attempt construction of an environmental ethic with foundations in human ethics. Based on the idea humans are dependent on the environment, we adversely and unethically affect other humans if we degrade the environment. Soon, this approach was recognized by some philosophers as not looking "deeply" enough at the roots of our problems and values. It only attempted to ameliorate the negative effects of a degraded environment to humanity. A more radical critique of the philosophical foundations of Western industrial society emerged which recognized the anthropocentric roots of the Western worldview. It implied that a workable environmental ethic, one which could protect Nature, and thereby support and protect humanity, could only be found in a less anthropocentric philosophical foundation. There are two opposing and rather polemic schools of thought in environmental ethics anthropocentric and non-anthropocentric. A discussion of the "pros and cons" of our anthropocentric heritage and the implications of an anthropocentric worldview have been extensively addressed earlier in Chapter Two of this thesis. Therefore, the following discussion is limited to the arguments for and against the possibility of a "workable" anthropocentric or non-anthropocentric ethic, not the desirability of such an ethic as suggested by human history.

Anthropocentric Ethics

Anthropocentrism is defined as the position "that considers man as the central fact, or final aim, of the universe" and generally "conceives of everything in the universe in terms of human values" (Webster, 1976). According to Miller (1988), an anthropocentric ethical attitude would include the belief humans are "in charge of-not merely a part of-nature" (p. 592). An anthropocentrically-oriented environmental ethic usually suggests it is necessary to work from within an anthropocentric viewpoint because of two arguments (1) it is the only viewpoint which we as humans can ever effectively, consistently and ethically implement or (2) it is the only viewpoint which we as humans can ever really have.

Watson (1983) suggested that because a biocentric perspective advocates "equality," it is inconsistent to demand that humans treat themselves differently than non-humans by having ethical considerations thwarting "natural behavior." He maintained the behavior evidenced in the domination of other species and the environment in general is natural, and to restrain human actions is a contradiction.

While providing a strong critique of classical anthropocentrism, Skolimowski (1984, p. 284) suggested that because all claims made on behalf of the biotic community are made by human beings, these claims are deeply and profoundly a product of anthropocentrism. He suggested "total egalitarianism, according to which every form of being has an absolutely equal right, is nonsense from the human point of view" (Skolimowski, 1984, p. 287).

It has been suggested the "radical egalitarianism" of biocentrism--converting the inherent value of all living things into an equal ranking--makes human life worth no more than that of an insect. That is undesirable because humans have unusual characteristics. Advanced technology puts us in a unique position. We have the power of life and death over all species on a short-term basis. Cultures based on elaborate social systems provide humans with a great variety of relationships and niches to fill compared to other species. Some anthropocentrists consider these differences a measure of our greater value and maintain a hierarchical value system. Biocentrists might consider unique human attributes our evolutionary legacy, and not consider them the basis for denial of intrinsic value to non-humans.

Norton (1984) suggested there are two forms of anthropocentrism, a "weak" and "strong" form. He suggested true non-anthropocentrism is unnecessary for an environmental ethic and weak anthropocentrism would serve as the basis for a viable environmental ethic. Norton argued that in the strong form of anthropocentrism, all value is explained by referring to the satisfaction of "felt" preferences of human individuals. The weak form suggested that all value can be found by either referring to the satisfaction of "felt" preferences of human individuals or value which is found in "reference to its bearing upon the ideals which exist as elements in a worldview essential to determination of considered preferences" (Norton, 1984, p. 134). Norton argued that weak anthropocentrism recognizes that "felt" preferences can be rational or irrational and it provides a critique of value systems which are purely exploitive of nature. In the weak form of anthropocentrism, value is placed on human experiences providing the basis for value formation. Therefore, nature can be valued because "human values are formed and informed by contact with nature." Norton argued weak anthropocentrism can adequately criticize environmentally destructive practices by incorporating concepts of humans affinity to nature without the need to resort to claims of nature's intrinsic value.

Weston (1985) suggested too much emphasis has been placed on intrinsic value in the development of an environmental ethic. He urged a "pragmatic shift" toward a plurality of values based on human desires and experiences. Although pragmatism is a form of subjectivism, because it makes valuing an activity of subjects who decide what is "pragmatic," he claims it is not necessarily anthropocentric. Weston suggested humans can view and value the world subjectively, without placing all the value on themselves. Weston claims subjectivism does not imply subject-centrism. His "philosophical" pragmatism rejected means-ends distinctions, "fixed, final ends," and perceived valuing as a certain kind of desiring. However, he suggested this does not rule out pragmatism as part of an environmental ethic. He argued pragmatism would imply a focus on the interrelatedness of our values, a kind of "ecology" of values which would allow all value systems to hold true and lend a certain flexibility under stress. He maintained the philosophical problems of intrinsic value include:

(1) it must be self sufficient, which is a difficult thing to prove,

(2) it is very abstract, and

(3) special justification is necessary. Because intrinsic value is self-sufficient, it cannot be justified by reference to other values.

Weston (1985) claimed because it cannot be justified by reference to other values, and it is abstract, intrinsic value is "philosophically fragile," and "too special to exist unproblematically in the world" (p.322). Therefore, he suggested the idea of intrinsic value "labors under needless restraint" and is a poor grounding for an environmental ethic. Weston claimed the power of his pragmatic approach "lies in what it does not say, in what it has removed the need to say." With this approach, feelings of "the experience of nature" can awaken respect and concern. Weston (1985) argued "these feelings are essential starting points for a pragmatic defense of environmental values, not a `weak' anthropocentric substitute for intrinsic values philosophers can't find" (p.322).

Katz (1987) addressed Weston's argument and suggested he is wrong for two reasons (1) the intrinsic value of natural entities is <u>not</u> the ground for all moral obligations regarding the environment, rather, it is just a very important one which should not be ignored and (2) Weston's "pragmatism" is too anthropocentric and subjective for a solid environmental ethic. Katz (1987) argued "the obligation to protect natural environment should not be based on `correct' experiences of humans as they interact with the environment" (p.233). Katz suggested a workable environmental ethic will share many fundamental concepts with pragmatism (e.g., the emphasis on the concrete situation) but it cannot ultimately rest on values of pragmatism, for "these values are inextricably bound up with human desires and interests" (p.233).

Rolston (1988) formally demonstrated that the natural world has fourteen values, such as life-support, economic, aesthetic, philosophical or religious and scientific values. He then maintained that value generates duty and therefore we should protect the natural world. Although many of his values are themselves anthropocentric (Ehrenfeld, 1978), he did not embrace an anthropocentric attitude towards the environment. He rejected the "rights" of non-human nature put forth by Stone (1975) and Regan (1983) and also the biocentric egalitarianism of Deep Ecology. Instead, he suggested humans do have a certain "superiority," but this should be integrated both morally and biologically into an "ecological niche." Rolston maintained that human actions should be restrained because the non-human life of the planet is more important to the survival of the global ecosystem. He provided 25 ethical "rules" to help humans practice restraint and compassion in their activities and promote a peaceful coexistence with the natural world.

Non-Anthropocentric Ethics

Non-anthropocentrism is most commonly termed "biocentric" and sometimes "ecocentric." According to Davis (1989), the essence of the biocentric position argues:

> . . . just as the Copernican revolution removed the earth from the center of the universe, the ecological revolution removes man from the center of the earth or biosphere "measure of all things," but an active participant in a vast organic universe. Since all life-forms interact equally with one another in the biocentric view, "respect for nature" becomes as much (if not more) a moral imperative as our conventional "respect for persons". . . . Any attempt to erect an ecological ethics that is primarily concerned with human-centered interests will, ecologically speaking, fail. (p. xxi)

Aldo Leopold is widely considered the first and foremost proponent of an ecocentric philosophy. In his concept of a "Land Ethic" proposed in "A Sand County Almanac" (1966), he set forth a visionary new perspective towards the non-human world. Leopold compared our traditional relationship with the non-human world and the non-ethical slave/master relationship of ancient Greece. He suggested it is time to extend our ethical sense to include a greater "community." Leopold stated:

> Land, like Odysseus' slave-girls, is still property. The land-relation is still strictly economic, entailing privileges but not obligations. . . . The disposal of property was then, as now, a matter of expediency, not right and wrong. (p. 237-238)

He recognized that ethics are based on a sense of obligations to one's community. Leopold maintained that humans must recognize ethical obligations to the community they belong to, which includes the soils, plants, waters and animals collectively known as "the land." He used his sense of "ecology" and its understanding of the interconnectedness of all life as a basis for this belief. He implied we cannot own the land, the land owns us. This did not mean Leopold believed there could be no "alteration, management and use of resources" (p. 240). It suggested, at least, his belief in the need to affirm some right of the land community to continue existence in as natural a state as possible. He believed history has shown that the "conqueror role is eventually self-defeating" and humans have not only an obligation for an ethical "respect" for other community members, but for the community as a whole. The work of Darwin and the science of ecology implied to Leopold that humans are a "plain citizen" of the land community and have no right to behave as lords of that community. Respect for the community coincidentally provides a better chance for human survival. Respect, not rights, was the basis of this ethic. His critique of the anthropocentric/economic valuing of the land suggested intrinsic value and/or value as part of the biological "whole" are more realistic indicators of worth.

Leopold (1966, p. 251) outlined the "land pyramid," where all life is supported by lifeforms "underneath" them, as the layers of brick on a pyramid support the ones above, which, in turn, support those above them. The "land pyramid" helped to illustrate the cycling of energy through the food chain, from primary producers such as plants near the pyramid's base, to carnivorous animals at the top, and then back to the soil at the pyramid's base, which provides again for the plants. In the land pyramid, Leopold outlined the value of the individual parts of the land to the whole. His "land ethic" was best summarized when he stated "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise" (p. 262). Starting from Leopold's insights and premises, many others have expanded this ethic to provide "workable" ecocentric ethical systems.

Callicott (1980) suggested anthropocentric traditions such as Judeo-Christian "stewardship" or secular humanism are inadequate for an environmental ethic. He used three test criteria in his search for an environmental ethic (1) consistency, (2) adequacy and (3) practicability. He maintained that Judeo-Christian stewardship is inconsistent with modern, scientific concepts of nature and our place within it. Even if questions of the internal consistency of classical Judeo-Christian worldview are disregarded, Callicott believed many of the ideas which support our "rightful stewardship" are contradicted by the science of ecology and its implications of "plain citizenship." Callicott would not deny we are extraordinary in some ways compared to other species but he suggested this does not imply stewardship.

Callicott maintained secular humanism is not a basis for an environmental ethic for two reasons. While it may be adequate for resource management, he suggested it is not adequate for an environmental ethic because it does not regard human harm to the environment as of direct moral concern. Callicott also argued secular humanism is also inconsistent with the evolutionary- ecological worldview because it sets humans apart from the rest of nature.

Callicott believed a non-anthropocentric "extensionist" viewpoint is insufficient for an environmental ethic based on all three criteria. He broke extensionist viewpoints into first and second phases, but they can be addressed here together. Callicott maintained extensionism is inconsistent with the ecological worldview because it is concerned exclusively with individual rights and needs while ecology is concerned with collective entities. Callicott (1980) argued, "An ethic requiring equal consideration for all individual beings. . . would result in more harm than good for the environment as a whole" (p. 419). He considered extensionism inadequate because it cannot address nor consider important issues facing the environment as a whole.

For example, species extinction and its effect on the global ecosystem cannot be considered because all values are focused on individual beings. Finally, he considered it impracticable and unlivable, "as even its own proponents confess" (Callicott, 1980, p. 419). For example, the generic rights problem (addressed earlier in this chapter), where the extension of rights to all beings necessitates the violation of another's rights to survive, is impracticable and unlivable. He concluded that an ecocentric perspective, which shifts the focus from an individualistic to holistic concern, as outlined by Leopold's Land Ethic, is practical, adequate, and consistent for an environmental ethic. He argued that concerns expressed about the practical nature of such an ethic are baseless because, while the health of the land is of greatest importance, prior social ethics and concerns are not disregarded but "accreted" upon. Callicott argued that the land ethic makes explicit provision for respect for individual members, both human and non-human, of the biotic community as well as for the community as a whole. He maintained that the land ethic does not compete with social ethics but provides the next step in an evolutionary interpretation of moral development. All previous human-centered ethics remain intact while additional, less urgent obligations to additional, less closely related beings, are added. Human needs are taken care of but in a way which is in the greatest harmony with nature. While Callicott (1980) briefly mentioned a Native American tradition as a source of an ecocentric environmental ethic, it focused on Western ethical traditions and arguments. He expanded his ideas cross-culturally in (1989).

Partridge (1981) suggested that Western philosophy's biases for reductionism and subjective anthropocentrism do not allow for the possibility of values deriving from natural systems. He maintained that a focus on individual entities is a "residue" from the attitudes of Western science, which has, until recently, overlooked the properties of wholes that cannot be seen in their parts.

Heffernan (1982) took a critical look at Leopold's (1966, p.262) "land ethic" maxim. He concluded that the stability of an ecosystem is indeed an ethical issue, substituting "ecosystem" or "biosphere" for Leopold's concern for "biotic community." Some philosophers declare that an ecosystem is not worthy of intrinsic value because it is not a sentient being. Heffernan disagreed, and following Goodpaster (1978), suggested that "the core of moral concern lies in respect for self-sustaining organization and integration in the face of pressures towards high entropy" (Heffernan, 1982, p.238).

The Deep Ecology work of Naess (1972), Devall and Sessions (1985), as well as criticisms thereof, have been addressed in other parts of this thesis, so they will not be repeated here. However, the Deep Ecologists would disagree with the argument that the only worldview humans can have is an anthropocentric one (Skolimowski, 1984). They would suggest that in the process of identification with a larger Self, humans can indeed speak with, and for, other beings on the planet.

Naess (1985) suggested cultural or individual definitions of the boundaries of "self" can vary greatly. Naess drew upon Indian philosophy, exploring the Hindu concept of "atman" and the idea of identification with "that which is in all beings." He pointed to the writing of the Western philosopher William James for a non-secular contribution to a wider definition of self. Naess suggested identifying primarily with a narrow, individualistic, egoic sense of self is common. However, increasing "maturity" can expand one's perspective to include broader definitions of self, an idea which is similar to the expansions of community Darwin implied, and Leopold and Nash described. Self-realization takes on new meaning with a definition of self that goes beyond the traditional boundaries of individual ego.

Naess (1985) suggested:

> Self-realization in its absolute maximum is. . . the mature experience of oneness in diversity. . . The minimum is the narrow self-realization by more or less consistent egoism--by the narrowest experience of what constitutes one's self and a maximum of alienation. As empirical beings we dwell somewhere in between, but

> increased maturity involves increase of the wideness of the self. (p. 261)

Naess believed one way of widening the self and maximizing self-realization is with a greater sense of identification. At first this seems similar to the idea which may have inspired some activities in Project WILD and other environmental education curricula. Identification with animals and the rest of nature is stimulated in activities which stress how animals and humans have similar needs. Animals which are cuddly and cute, interesting, inspiring, or have human-like qualities might motivate students to protect and appreciate them because of perceived similarities or attractiveness. These activities are also used to teach basic ecological concepts, such as human interdependence with other living things and shared "resources" such as habitat, food, etc. Human and animal life will be enhanced because of this identification by appreciation in the former case and, hopefully, preservation in the latter. However, Naess's (1985) definition went much further and suggests "Identification is a spontaneous, non-rational, but not irrational process through which the interest or interests of another being are reacted to as our own interest or interests" (p. 236). Naess suggested we should not only appreciate and protect animals but also to actually consider them connected to ourselves. Again this idea parallels but is not limited to the evolutionary kinship of Darwin or the food chain and ethical relationships of Leopold. Naess (1985, p. 236) stated "Joy would elicit joy, sorrow would elicit sorrow." He claimed "solidarity," empathy or sympathy presuppose a process of identification and while they are similar or useful terms, they are still inadequate.

Naess stated that a high level of identification does not eliminate conflicts of interest. For example, all living things that are not plants have to kill to survive. However, in cultures that perceive animals with a greater sense of kinship, ceremonies and rituals "have the function to express the gravity of the alienating incident and restore the identification" (Naess, 1985, p. 262). Naess suggested there are also problems of priority concerning identification with individuals versus identification with species, ecosystems, etc. However, he implied priority is a much less serious problem than alienation, which he states is the opposite of identification. He suggested alienation is intensified by altruism. Acting as if "I ought to. . . " helps to maintain the artificial, dualistic "I-It" and "egoic-altruistic" distinctions. He stated (Naess, 1985, p. 262), "There is no need for altruism towards those with whom we identify." Naess's work, as well as the work of other

Deep Ecologists, provided a non-secular argument for a non-anthropocentric environmental ethic.

Callicott (1989) continued his "defense of the Land Ethic," when he clarified and explored Leopold's efforts and their implications for a "workable" environmental ethic. His latest work contrasted Western and non-Western worldviews, and he followed the course of Western attitudes towards nature, moving deeply into the kind of historical analysis of Western philosophical and scientific thought similar to Berman (1984) and Capra (1985). Callicott (1989) similarly concluded the classical European natural philosophy perceived nature as an:

> inert, material and mechanical continuum exhaustively described by means of the arid formulae of pure mathematics. In relation to nature the human person is a lonely exile sojourning in a strange and hostile world, alien not only to his physical environment but his own body, both of which he is encouraged to fear and attempt to conquer. (p. 182)

Callicott contrasted the traditional Western worldview with some traditional American Indian worldviews. He compared the practical implications of either worldview towards nature and concluded that the worldview typical of American Indian peoples has included and supported an environmental ethic, while that of the Europeans has encouraged "human alienation from the environment and an exploitive practical relationship with it."

Callicott addressed the opinions of Regan (1982) and Martin (1978) who disagreed with his conclusion. He rebuted Regan's argument, based on Martin's argument, that the Native American's acted out of fear of retribution, not moral or ethical considerations. Martin maintained they behaved with only their own self-interest in mind and looking towards Native American's for an ethic is based on a romantic notion more than fact. He also suggested because the "generic" Native American worldview is so different from Western tradition, it would not be useful because "even if he (the Indian) were capable of leading us, we could not follow" (Martin, 1978, p. 188). Callicott (1989) believed the American Indian cultures:

> . . . provided their members with an environmental ethical ideal, however, much it may have been from time to time or from person to person ignored, violated or, for that matter, grudgingly honored because of fear of punishment. (p. 201)

Callicott suggested that the Western European tradition, on the other hand, is followed with the same inconsistency by individuals and not only fails to provide a healthy environmental ethic but is conspicuously lacking thereof compared to other cultures. Callicott argued the Western European tradition could safely be characterized as having an "anti-nature" attitude. Therefore, he suggested, with adaptation, we could learn something from the Native

American worldview, if we are searching for a new and healthier way of relating to nature.

Callicott also supported those looking to the native cultures as a source of an environmental ethic by refuting Guthrie's (1971) often repeated arguments. Guthrie maintained primitive people were as environmentally insensitive as their Euro-American successors, and if they had the technology they would have used it indiscriminately to plunder the environment. Callicott found the source of Guthrie's argument in the ethnocentric writings of Hobbes and Locke, and Callicott maintained not only is this contention lacking in empirical evidence on either side, but to "adopt a technology is, insidiously, to adopt the worldview in which the technology is imbedded" (Callicott, 1989, p. 205). This was supported by the work of Polanyi (1962), Kuhn (1970) and others who maintained knowledge and the use of that knowledge, particularly the fruits of science and technology, are paradigm dependant. Callicott argued Native Americans did not and would not have developed technology as exploitive to the land as that which is in use today. If they did, they would have a cosmology which necessitated a respectful relationship with non-humans and "Mother Earth" herself, and would have been more likely to exercise greater restraint. Callicott discussed other flaws in Guthrie's logic and supporting evidence, and again concludes the

Native American traditions offer a wisdom useful in a search for an environmental ethic.

Drawing upon Native American traditions, Callicott suggested that while reconstructing Native American attitudes is somewhat speculative, there is still great value in working with what we do know. There was no monolithic "Native America," but within a myriad of traditions, common threads of a shared ethic emerge. He used two sources, first-contact European records and recorded personal recollections about tribal beliefs by "spiritually-favored Indians" such as John Fire Lame Deer (1976), along with modern ethnographic reports. The thread common to all accounts is the Native American perception of all non-human entities as having a spirit and being very much "alive." Using a variety of sources, Callicott (1989) concluded:

> The Ojibwa, the Sioux and, if we may safely generalize, most American Indians, lived in a world which was peopled not only by human persons, but by people and personalities associated with all phenomena. . . moral values implied document the consistency of the principle of mutual obligations which is inherent in all interactions with "persons." . . . The implicit overall metaphysic of American Indian cultures locates human beings in a larger social, as well as physical, environment. (p. 189)

Relating to the world around them "through bonds of kinship, mutuality, and reciprocity," the Native American view is much more supportive of a "constructive symbiosis of people and their environment than is the view of nature predominant in the Western European tradition" (Callicott, 1989, p. 190). The Native American worldview, in its final understanding of the interconnectedness of all things and the ethical obligations thereof, is surprisingly similar to and compatible with Leopold's Land Ethic.

Taylor (1986) presented a well developed and coherent justification for a biocentric value system. Using a Kantian ethical approach, he outlined formal and material conditions for valid moral principles in human ethics and argues environmental ethics must be symmetrical with, but not identical to, human ethics. He then suggested "respect for nature" should be an "ultimate moral attitude," not one explained or justified in terms of a more fundamental one (Taylor, 1986, p. 96-97). This can be contrasted with a derivative moral attitude. For example, a person might morally disapprove of actions which degrade the environment. This moral attitude is derivative from an ultimate moral attitude. An anthropocentric ultimate moral attitude might state, "It is morally wrong to degrade the environment because that will degrade human existence for future generations." Taylor suggested that we must elevate "respect for nature" to the level where it has ultimate status and can be used as a guiding principle for human conduct.

Taylor provided a "workable" rationale about why we must give non-human living things "moral subject" status, based on the fact they can be shown to have a "good" of their own, that is, they can be benefitted or harmed. They are not required to have awareness of or take actions to secure this "good." Taylor also predicated having respect and the extension of moral consideration with the acknowledgement of a non-humans's "inherent worth," not to be confused with intrinsic value or inherent value. The terms are used interchangeably by some authors, but Taylor drew clear distinctions between them. Taylor attributed inherent worth only to entities that can be shown to have a "good" of their own. He stated this was "essentially identical" to Regan's (1983) "inherent value."

Taylor disputed the idea that the science of ecology shows us how to live in relation to the natural world, an idea championed by Leopold (1966) and others. He suggested it "confuses fact and value, `is' and `ought'" (Taylor, 1986, p. 59-51). He maintained this science can only provide us with knowledge concerning organisms and relationships, from which we can make objective judgements about what is in their interest or contrary to their interest. From this understanding he maintained that we can actually take an "animal's standpoint. . . without a trace of anthropomorphism" (Taylor, 1986, p. 67) and make informed judgement about what is desirable or not desirable from that standpoint. This is also useful for consideration of plants, which also have a "good" of their own. Whole species-populations can also be given moral subject status on the basis of the cumulative effects to the individual non- human "good(s)" of the members of that species. He did not claim moral rights for non-human nature, which he claimed can be extended only to "people," a term which is defined in terms of awareness, not species classification. Working from these considerations and a well thought-out and defended philosophical foundation of biocentric principles, he made "respect for nature" practical by qualifying this ethic with "priority principles." The needs of both human and non-human nature are weighed and addressed according to these principles, providing a utilitarian ethic seeking the greatest good for all, not just humans.

Environmental Ethics and Education

Yambert and Donow (1986) discussed three basic problems that are encountered while teaching environmental: ethics (1) the "two cultures" problem, (2) the "hardware" problem, and (3) the "Neanderthal" problem.

The "two cultures" problem refers to the two cultures of science vs. humanities. They suggested a more interdisciplinary approach than is now the case is necessary and stated:

> If students interested in environmental education took several courses in philosophy and psychology in addition to their science courses, they might be better

> equipped to understand the problems involved in changing the public's environmental attitudes and behaviors. They would be more apt to understand values as well as scientific knowledge, have a sense of the larger issues of times and cultures other than our own, and appreciate the significance of these issues on an ethical and ecological scale. (Yambert and Donow, 1986, p.14)

The "hardware problem" concerned a seeming lack of ability for the human brain to truly understand the physical and philosophical complexity of the world we live in. Our brain is quite adequate as a reflexive instrument, having evolved in a world where survival was generally an issue involving relatively short spans of time and concern limited to self and a close circle of other humans. They maintained we are somewhat unequipped to honestly deal with other species and future generations (although they disregard non-Western traditions which do deal with these issues). Yambert and Donow paralleled the writings of many other ethicists as a solution, and quoted Leopold's call for a greater sense of community and Kohlberg's (1981) sequence of moral development which moves from egoism to universalism.

The third problem they discussed is the "Neanderthal Problem." They quoted Sessions (1983) in suggesting Dominant Western philosophy from biblical times to the present has encouraged man to establish his preeminence over nature. Rachel Carson (1962) suggested this "conquest-of-nature" mentality probably arose in the Neanderthal stage of ecological thinking. Their solution was multi-fold. First, we must root our ethical system in a more ecologically accurate worldview, continuing to amass scientific understanding while simultaneously working to change cultural norms and laws to be in greater harmony with the world around us. A change in our basic assumptions about "man's place in the universe" is necessary, but not sufficient. They maintained:

> Although environmental education can teach children an ecocentric philosophy, children usually model their behavior on that of adults around them. To make a drastic change in our anthropocentric culture, we need a code or set of rules to guide adults ecological behavior. Such a code would not only help solve our Neanderthal problem, it would also provide a foundation for Leopold's community instinct. (Yambert and Donow, 1986, p. 14)

Therefore, they included such a set of rules or norms, joining the ranks of Naess (1973), Devall and Sessions, (1985) and others who maintain that a prescriptive set of norms with respect to the environment is necessary.

CHAPTER III

METHODOLOGY

Content Analysis

The methodology used in this study to examine Project WILD for the components of the Dominant Western Paradigm and anthropocentrism was content analysis. Content analysis has been described as a "research methodology that utilizes a set of procedures to make valid inferences from text" (Weber, 1985, p. 9). Krippendorff (1980, p. 2) had a similar definition. Krippendorff's approach emphasized a relationship between the content of texts and their institutional, social or cultural contexts. According to Weber (1985, p. 9), possible uses for content analysis included:

1. auditing communication content against objectives
2. identifying the intentions and other characteristics of the communicator.
3. detecting the existence of propaganda
4. revealing the focus of individual, group, institutional or societal attention.

This thesis explores the belief systems, values and ideologies present in the content of Project WILD with respect to two paradigms of thought, the Dominant Western

Paradigm and the New Environmental Paradigm. Concern about the implications of a Dominant Western Paradigm perspective are catalyzed by the ideas of Deep Ecology and its seminal authors. An exploration of Deep Ecology provides references to prior works on the Dominant Western Paradigm and the understanding that paradigms of thought and knowledge are latent in all cultures. Deep Ecology also implies that analysis on the paradigm level is crucial for an honest appraisal of the point of view inherent in even the most "objective" of knowledge. This is based on the awareness that, in the foundations of all knowledge, are the ideologies, assumptions, beliefs and values that inspired the quest for that knowledge, helped to interpret that knowledge, and failed to inspire other research questions which would be asked from other paradigms of thought and might provide different results. Content analysis is very appropriate for the purpose of this study because, according to Weber (1985, p. 10), content analysis is particularly useful to ". . . point to the state of beliefs, values, ideologies or other culture systems" of various groups, either individually or relative to each other."

Content analysis methodology is used to measure "manifest content," the visible, surface content and meaning of text, as well as "latent content," the underlying meaning of text. Some researchers do not consider content analysis to be a sufficiently critical methodology because it often does not address latent content constructed in the use of symbols and structure in a text (W. M. Porter, personal communication, December 1, 1989). Babbie (1986, p. 272) suggested that latent content is a more accurate measure of the true meaning of text. He noted, however, that there is more subjectivity involved in the analysis of latent content and that accordingly, reliability and specificity may suffer in such an analysis.

Latent content is implied when value is "transfered" by association with something of known value. For example, "Wildlife is valuable for food," "Wildlife is valuable for art," and "Humans and wildlife share habitat" all function as "value transfer" statements. Since "food" and "art" are valued by humans, the latent content of these statements implies that wildlife is of value. In the third statement above, wildlife obtains value in a subtle manner, because it has a commonality with humans. Habitat also obtains value because it is something that humans need. The value is implied and transfered by association with something of intrinsic value, in this case, by association with humans.

According to Weber (1985, p. 10), "There is no simple right way to do content analysis. Each investigator must judge which methods are appropriate for his or her problem." This study will focus on manifest content by surveying for specific statements, sentence structures, phrases or words which indicate the focus or orientation of the text. Latent content will also be analyzed, but only to a limited extent. Such analysis will be undertaken only when value is transferred, such as in statements similar to the three statements above. Although an analysis of latent content would be useful for many statements within Project WILD, in-depth latent content analysis is beyond the scope of this study. Because the study is designed to point out the philosophical orientation of Project WILD, content analysis relying primarily on manifest content is a sufficient methodology if indicators of orientation are found.

Units of Analysis

The fundamental task of content analysis is to break the unit of analysis, such as words, statements, and themes,etc., down into smaller content categories that have similar meanings. This can be based on the precise meaning of the unit or what the units imply collectively. In this study, the primary unit of analysis will be the statement. For the purposes of this study, a statement is analogous to a sentence. The statement was considered the best unit of analysis for Project WILD because words were perceived as too small a unit to efficiently illustrate the theme or orientation of an activity. The "theme" of activities was considered too general to be useful as the primary unit of analysis, although the theme is used as a supplimentary indicator of the orientation of the activities. Paragraphs were not used as the unit of analysis because the Project WILD manual doesn't use a consistent paragraph structure throughout the manual.

In this study, statements containing multiple concepts or messages were broken into component statements. For example, the statement "Muskrats are valuable for their fur, aesthetic, scientific and intrinsic value" contains multiple concepts. It would be broken up into four different statements muskrats are valuable for fur, muskrats have scientific value, muskrats have aesthetic value and muskrats have aesthetic value. Each component would be classified independently.

Reliability, Accuracy and Validity

When conducting a content analysis, categorization must be reliable as well as valid if inferences are to be drawn from the text. Reliability generally concerns stability, reproducibility and accuracy of categorization. Stability, a measure of how much categorization changes over time, has been shown to be high because of two reclassifications by the primary researcher over the course of one year with similar results. Reproducibility was not verified in this study by having persons other than the primary researcher reclassify anthropocentric and non-anthropocentric statements in Project WILD .

The accuracy of anthropocentric or biocentric definitions was validated by Dr. Bill Devall from Humboldt State University in Arcata, California. He is a widely-recognized expert on anthropocentric or biocentric attitudes. Accuracy was also determined over many hours of probing anthropocentric and non-anthropocentric attitudes and statements with Dr. Jon K. Hooper of California State University, Chico. Two other reviewers also verified the accuracy of classifications. These non-experts (Ms. Kristin Hertzog, a student, and Mr. Mike Gillis, a professor, at California State University, Chico) possessed teaching experience and some knowledge of the conceptual background of the topic.

Face validity, the most common form of validity used in content analysis (Weber, 1985) was assessed by comparing my definitions and classifications of anthropocentric/non-anthropocentric concepts and statements with those found in the literature and those personally communicated to the author by experts.

The lack of prior studies specifically analyzing environmental education curricula for anthropocentric or non-anthropocentric statements made determination of construct validity difficult. Construct validity was eventually assessed by correlating anthropocentric and biocentric statements with related studies that used statements to indicate the anthropocentric or biocentric orientation of subjects. Statements found in the New Environmental Paradigm scale of Dunlap and Catton (1980) and attitude statements of Cotsgrove (1982), Milbrath (1984), and Devall and Sessions (1985) proved similar to ones used in this study, although no identical statements are used.

Trial Coding

Trial coding was done on a variety of curricula to test the clarity of category definitions and to reveal ambiguities in the coding rules. Sample coding was carried out on a list of "Important concepts for environmental education programs" from a study done by Ohio State University (Roth, 1970). Coding was also tested using "Environmental Respect A New Approach to Outdoor Education" (Safari Club International, 1976) and Project Learning Tree (American Forest Council, 1988).

Collection and Analysis of Data

This study was conducted from September 1989 through March 1990. The primary variables consisted of statement content, form, focus and meaning. The analysis was conducted to determine if attributes of anthropocentrism and non-anthropocentrism were present in Project WILD. Stratified sampling of Project WILD is outlined in individual sections listed below.

Data for this study was collected by four seperate analyses:

1. A replication Horwood's 1987 analysis of Project WILD (Research analysis #1) to determine if his claims of anthropocentric bias in Project WILD are valid for the 1988 U.S. version.
2. An analysis of the conceptual framework that forms the conceptual basis for each Project WILD activity.
3. An analysis of all activities in Project Wild to determine if they have a techno-scientific (TS), non-science and non values (NS), values transfered by humans (VTH), anthropocentric (ANTHRO), or biocentric (BIO) focus or a combination thereof.
4. An analysis of those activities listed in the Topical Index of Project WILD that are specifically concerned with "Intrinsic Value" to see if they do indeed address the topic.

Research Analysis #1: Horwood's Analysis

Horwood's 1987 analysis of Project WILD was replicated to determine if his claims of anthropocentric bias in

Project WILD are valid for the 1988 U.S. version. Horwood listed four pieces of evidence to support his claims of bias:

1. A preponderance of photographs of humans, human artifacts, and animals that humans like or resemble.

Horwood counted photographs in categories according to the dominant subject portrayed. Some categories were chosen based on the words of the text. For example, Project WILD defines wildlife to include microscopic animals, parasites and all other animals not domesticated. Therefore, Horwood counted microscopic animals and parasites. The photograph was counted twice if it had more than one subject. For example, if a picture had one human and one large mammal, it was counted once for the human and once for the mammal. These, and all other methods and definitions for the classification used by Horwood, were duplicated in the current study.

2. Exclusion of humans from its scheme of wildlife classification.

Activities listed in the Topic Index of Project WILD under "classification" were examined to determine if they involved classification of wildlife. If wildlife classification was the subject of the activity, the activity was examined to determine if it mentioned humans within the definition of either wild animals or domesticated animals. The current study adheres to the same methodology.

3. Lack of activities that teach the "intrinsic value" of wildlife.

Horwood examined the conceptual framework to determine if "intrinsic value," the only value stated in qualified terms, had activities listed in the Topic Index that addressed this value. He found none listed, although each of five other stated values (e.g., "Wildlife has ecological and scientific values" or "Wildlife has commercial and economic values") has 9 to 15 teaching activities each. This study replicates his analysis procedure, and goes further to analyze any activity which claims to address this value to see if, and how, it does address it.

4. Lack of activities that illustrate man's position in the food web.

Horwood examined any activity which addressed "food chain," "food web," or "predation" topics to see if they included humans in the activity. His process was replicated in this study.

Research Analysis #2: Analysis of the Conceptual Framework

The Project WILD conceptual framework forms the conceptual basis for each Project WILD activity. Data coding first involved analyzing each statement for six components:

(A) Statement Type,

(B) Locus of Activity,

(C) Concept Focus,

(D) Value Form,

(E) Value Reference, and

(F) Object of Value.

Then, each statement was classified into a (G) Framework Category with respect to whether it was techno-scientific, value transfer human, value neutral, anthropocentric, or biocentric. These components are described below

A. "Statement Type" differentiates "IS" from "OUGHT" statements. "IS" statements describe "what is" and provide some sort of factual information for the reader. For example, "Dinosaurs are extinct" would be classified an "IS" statement because, as far as we know, this is a statement of fact. "IS" statements are often associated with scientific information, although value statements can also take this form. For example, "Different cultures have different values concerning the environment" is an example of an "IS" statement concerning values. In contrast, "OUGHT" statements are prescriptive in nature. They do not describe "what is;" They describe "what should be." For example, "Humans should treat wildlife with respect" would be classified as an "OUGHT" statement.

B. Locus of the Activity (L.O.A.) is a generalization or approximation about the subject of the statement. For example, the statement "Humans need habitat" would be placed in the (L.O.A.) category as "humanshabitat" because of a focus on two subjects, humans and habitat. It is not intended to be an exact or defining description of the topic. Although it is often a fairly accurate approximation of the focus of the statement and, if associated with an activity, with the focus of the activity, it is a secondary unit of analysis and is primarily intended to orient the reader.

C. The "Concept Focus" is a summary of the main concept, concepts or message that the statement addresses. Like a L.O.A., it is an approximation. It varies from one word used to describe the concept transmitted in the statement (e.g.,"Adaptation") to a short statement describing the information (e.g.,"Modernization separates people from contact with the natural world and affects their opinion about wildlife"). The statement "Humans need habitat," might be classified as "recognize that humans need habitat." Although it is often a fairly accurate approximation of the focus of the statement and, if associated with an activity, with the focus of the activity, it is a secondary unit of analysis and is primarily intended to orient the reader.

D. The "Value Form" category focuses on the manner in which value is indicated, either an explicit (E) valuing or an implicit (IMP) valuing. For example, "Horses are valued for their beauty" explicitly defines a value for horses and would be an (E) statement. The statement "All form of life rely on sunlight" implies that sunlight is of value. An activity which does not "value" does not show any marking in this category.

E. The "Value Reference" category describes the manner in which value is transfered. Intrinsic value (INT) is indicated when something is valued without reference to other objects. For example, the statements "Clean water has intrinsic value," "Clean water is of value, regardless if it is used by anyone or anything" or "Mice are of value to other mice and have intrinsic value" explicitly indicate intrinsic (INT) nature. Value in reference to another object of known value is denoted by a (R), indicating value that is transfered relative to another object. The object which value is transfered from is noted. For example, the statement "Humans use wildlife for entertainment" values wildlife in reference to human activities and would be denoted "R to human activities" in the value reference category. An activity where value is referred from a general or undetermined source is labeled (U) For example, the statement "All living things, including humans use sunlight" places implicit value on sunlight. The locus of value is extremely general (all life) and while it is a relative valuation, there might be one particular species which comes to mind for consideration. Therefore, the true locus of value is undefined and it is designated "U" An activity which does not "value" would not show any marking in this category.

F. The "*Object of Value*" category describes the primary object which is explicitly or implicitly valued. In cases where more than one thing is valued, both are listed. For example, in the statement, "Humans value ice cream sundaes and root beer," the valued objects would be listed as "ice cream sundae:root beer." In the statement "Muskrats are valuable for their fur, aesthetic, scientific and intrinsic value," there are multiple concepts. It would be broken up into four different statements muskrats are valuable for fur, muskrats have scientific value, muskrats have aesthetic value and muskrats have aesthetic value. Each component would be classified independently. In this case, there are three anthropocentric values, namely, fur, aesthetic and scientific. All three describe something which is of use to humans or focus on human activities. Since "intrinsic value" is a biocentric concern, the overall statement would be categorized as having three anthropocentric and one biocentric components.

It is critical to note that all possible objects of value are not always listed. For example, in a discussion of human attributes or actions, the mention of art, basket-making, modernization, weaving, politics, food, water, shelter, science, management or recreation transfers implicit value because of an association with intrinsically-valued humans. These items will not be listed as objects of value, even though they might be valued by humans.

G. The Framework Category is the final component, where the information from previous categories is analyzed to determine what type of statement was made. Within this classification, statements could be classified as techno-scientific, value transfer human, values neutral, anthropocentric and biocentric or a combination thereof, as these classifications are not mutually exclusive in a single statement. A statement was classified as techno- scientific if it fulfills one or more of the following conditions

1. The skills or topics it covers relate primarily (more than 50% of total skills or topics) to analysis, application, classification, comparison, computing, description, evaluation, graphing, inference, invention, listing, management, observation, problem solving, reporting, research, or synthesis. These topics are general, technical activities employed in scientific pursuit and are chosen because of

their presence in many science activity guides as skills or topics to be utilized.

2. the primary focus of the category is the learning of scientific (ecological) concepts or "facts."

For example, the statement "Adaptation is continuous within all ecological systems" is concerned with explaining the ecological concept of "adaptation." This concept is found in ecology texts and is a scientific concept that does not consider values or worldview. As such, it would be classified in the "techno-scientific" category.

3. the framework topic is purely informational, places no value on an object and explicitly prescribes no ethical, moral, or respectful relationship towards the object.
On the level of structural analysis, if a statement is a purely "IS" statement, it would qualify as "techno-scientific."

For example, "Wildlife is all around us, even if we cannot see it" concerns human powers of observation, use or non-use of our senses, and the distribution of wildlife. It tells us what "is." No "OUGHT" is implied. There is no mention of value because scientific statements are designed to disregard value and just transmit "facts." Although the focus is on human faculties in this statement (as compared to animal faculties or perspectives), it is still primarily a "IS" as well as "TS" statement concerning the abundance of wildlife.

4. The statement focuses on humans and transmits information presumably gathered in scientific studies, either measured statistically or empirically.

For example, "Human impacts on wildlife are caused by. . . " is classified "TS." The focus is on transmitting scientific information regarding humans and wildlife. Although similarities to an "ANTHRO" statement exist, such a statement would not be classified as an "ANTHRO" statement, if it takes a form similar to the one above because, while it implies value and indicates a concern, the concern is for wildlife. There is no indication if this concern is ultimately focused on human interest in use of wildlife (an anthropocentric interest) or concern for the well being of the wildlife regardless of the ability to use it (a biocentric interest) and therefore it is treated as a "fact" (TS) statement. While an overabundance of statements concerning humans implicitly places value on humans and human activities, they will not individually be considered value statements.

Techno-scientific statements are found throughout science texts and in many other disciplines. A short list of statements was compiled (see Appendix A). However, the variety of "fact" statements is infinite; therefore the form of a statement is more important than the exact "fact" transmitted. For example, the statement "Owls eat mice and other rodents" is similar to the statement "Each person affects the environment" because it states empirical knowledge which could be found in a science textbook.

The techno-scientific category is not mutually exclusive. A statement could be classified in this category and one or more other categories. The statement "Wildlife is a renewable resource" is a "fact" (TS) statement. However, the emphasis is on human activities, wants and "needs." Value is implied because the object in question is a resource. In common usage, a "renewable resource" means a resource which humans use that can replenish itself if not overused. The concept of "renewable resources" usually is not used in pursuit of the best interests of the resource itself and is often the rationale for harmful exploitation of the "resource." In addition, perceiving an entity as a resource tends to benefit only humans. Therefore, it is also an "ANTHRO" statement. It would be classified as both techno-scientific and anthropocentric and labeled "TS: ANTHRO" because it has components of both a completely human-centered perspective and a "fact" statement. The statement "Various groups are trying to decide how many wild horses should be saved for _________ values" is also a "TS:ANTHRO" statement unless the stated value is "intrinsic" because the focus is on what kind of value and how much value humans place on these horses. The statement "Various groups are trying to decide how many wild horses should be saved to prevent damage to the ecosystem" is more likely to be a "TS:BIO" statement because concern for the ecosystem is a biocentric or ecocentric concern. However, there is no indication if the ecosystem is to be saved to ultimately serve human needs or because the ecosystem has intrinsic value. Because our society has strong anthropocentric tendencies, granting intrinsic value to either the horses or the ecosystem cannot be assumed. Intrinsic value must be explicitly stated. Therefore, this statement would be classified as "TS:VN:poss.BIO."

The classification "values transfer human" (VTH) refers to statements which are not purely fact statements and have value transfered relative to humans. Even though such statements deal with humans, they would not considered anthropocentric (ANTHRO) for the purposes of this thesis. For example, the statement "Humans and wildlife need clean water" implies that clean water is valuable because humans and wildlife need it. Human life is valued in most cultures and therefore, something which allows humans to survive is implicitly given value. However, it has been suggested that in modern, Western cultures, humans place intrinsic value only on humans; all other objects derive value relative to their utility to humans (Ehrenfeld, 1979; Berman, 1984; Devall and Sessions, 1985). In some other modern and "primitive" cultures, wildlife might have intrinsic value, but this is the exception to the rule. Unless something is valued intrinsically, it has no value of its own and value must be transfered by association with something of intrinsic value. Unless an object is explicitly given intrinsic value, it has only instrumental value or it is valueless. Therefore, "wildlife" also takes on value by its association with something given intrinsic value, namely, humans. If wildlife is of value only because of its value to humans, then the ultimate source of all value in the statement "Humans and wildlife need clean water" is humans. If all value were intentionally placed on humans, this would be an anthropocentric attitude. However, since the author's intent cannot be surmised, and there is the possibility that intrinsic value is placed on wildlife, the "VTH" classification is used to indicate where the true locus of value is unknown but is possibly focused exclusively on humans.

When value is transfered but the source of transfer is general, not known, or cannot be proven, a "values neutral" (VN) classification is given. For example, "All living things use sunlight" places implicit value on sunlight. The locus of value can not be determined and therefore it is a "VN" statement.

A statement is classified as anthropocentric (ANTHRO) if the primary concern is the value of wildlife to humans. For example, the statement "wildlife has aesthetic and spiritual values," relates to human-centered concerns. Aesthetics and spirituality are solely human considerations, as far as we know.

A statement was classified as biocentric (BIO) if the primary concern or perspective is one of intrinsic value or regard, such as the statement "Wildlife has intrinsic value, although humans often only recognize values based upon human wants and needs." While this statement is quickly qualified, it does indicate that the focus of the activity is designed to address the intrinsic value of wildlife. Other biocentric statements include "Humans are equal partners, not rulers, of the environment" or "Humans take more than their share of the world's resources."

Since anthropocentric or biocentric analysis is relatively new, a list of statements indicating orientation was developed. Statements in the Framework were compared to these lists and similarities in wording or form were noted. Sample techno-scientific, anthropocentric and biocentric statements are found in Appendix A.

Anthropocentric or biocentric activities are primarily concerned with value, use, or meaning. For example, an activity that stated, "The major purpose of this activity is for students to recognize that horses have aesthetic value" is providing students with a statement of fact, an "IS" statement. But this statement is much more than that. Besides "objective" knowledge, this statement also transmits value information. It states that horses have aesthetic value. Aesthetic value is a purely human concern. As far as we know, only humans are concerned with aesthetics. Therefore, this statement is an anthropocentric value statement. This statement indicates that the value of horses is an instrumental one and relates to a human concern, namely, aesthetic appreciation. To cite another example, an activity that focuses on the use of animals in advertising tends only to promote the anthropocentric need to value wildlife for human uses. An activity which relates animal needs and characteristics to human needs and characteristics leads the reader to valuing because of a connection with the only thing we intrinsically value, humans. This is in contrast to an "intrinsic value" statement, which might say, "Animals have needs and values of their own, which humans often ignore." Animal needs or characteristics are discussed with no need to transfer value through relationship with humans. Fundamental to this section of the methodology is the understanding that a biocentric or New Environmental Paradigm perspective is not latent in our culture (this assumption was outlined in detail in Chapter Two) while the anthropocentric or techno-scientific perspective is latent. Unless a biocentric or NEP perspective is clearly stated and emphasized (such as concerns for intrinsic value), or the skills that would promote that such a perspective (intrinsic valuing, harmonizing, empathizing, ethical or moral discernment,etc.) are noted, an activity cannot be assumed to have biocentric or NEP content.

Research Analysis #3: Analysis of Individual Activities

Each activity in Project Wild was analyzed to determine if it has a techno-scientific (TS) focus, non-science and non values (NS) focus, values referenced to and transfered by humans (VTH) focus, anthropocentric (ANTHRO) focus, or biocentric (BIO) focus or combination thereof.

Data coding in this analysis involved analyzing the activity for twelve components:

(A) Locus of Activity,
(B) Concept Focus,
(C) Description Check,
(D) First Subject,
(E) Science Check,
(F) Skills Check,
(G) Defined Intrinsic,
(H) Actual Intrinsic,
(I) Statement type,

(J) Value Reference,

(K) Object of Value, and

(L) Comparison Correlation.

The activity was then assigned an (M) Activity Classification. Finally, comments on the rationale for classification were added.

A. Locus of the Activity (L.O.A.) is a generalization or approximation about the subject of the "activity purpose" statement, which is described below. It is not intended to be an exact or defining description of the topic or activity. Although it is usually a fairly accurate approximation of the focus of the activity, it is primarily intended to orient the reader. The primary source for information about the L.O.A is found in the "Background" section for each Project WILD activity, where there is a statement that states, "The major purpose of this activity is for students to. . . " or "This activity is designed for students to. . . ." Both of these statements focus on learning outcomes. While the statement does not describe everything that may be transmitted in the activity, it does indicate the stated purpose of the activity and is assumed to reflect the author's intentions. These type of statements are referred to as Activity Purpose (AP) statements. The AP statement, which is a primary indicator of the orientation or focus of the activity, was analyzed to produce both the LOA and

Concept Focus categories, which were derived from the AP statement. The AP statement, LOA and Concept Focus were analyzed by comparing both to the Comparison statements (Appendix A) used in the other analyses. A similarity of form or function was referenced to a Comparison Statement or group of statements and noted in the Comparison Correlation category.

B. The "Concept Focus" is a summary of the main concept, concepts or message that the statement addresses. It is merely an approximation. It varies from one word (e.g., "Adaptation") used to describe the concept transmitted in the statement to a short statement describing the information (e.g., "Modernization separates people from contact with the natural world and affects their opinion about wildlife"). Although it is a fairly accurate approximation of the focus of the statement, it is primarily intended to orient the reader.

For example, in the hypothetical AP statement "The major purpose of this activity is for students to recognize that animals are adapted to their environments," there is a subject/verb combination ("animals"/"adapted") which indicates that the subject is "animals" and that they "adapt." Animals are the LOA because they are the focus of the activity. The Concept Focus is "adaptation." The eventual use of this knowledge (anthropocentric, biocentric or otherwise) was not in question. What is of interest is what the activity is designed to transmit. In this case, it is designed to transmit a scientific concept, adaptation. Therefore, the statement would be classified as a techno-scientific activity. It transmits an "is," a fact. The concept of adaptation is found in natural history or ecology texts and describes a scientific theory of change. We are not sure if its focus of concern or eventual use is anthropocentric or biocentric. Therefore it would be classified as "value free" and neutral, another indicator of a techno-scientific activity.

C. Description Check was used to make sure the defining statement described in the AP statement and the LOA and Concept Focus categories, which were derived from the AP statement, were accurate descriptions of the activity. If the AP statement was a good approximation of the focus of the activity, a "y" (yes) was placed in this category. If the AP statement was not a good approximation of the focus of the activity, an "n" was placed in this category. For example, if the defining statement stated "The purpose of this activity is to describe the possible effects of pollution on animals" but the actual focus of the activity was on humans and only in the last part was a statement made reference to animals, an "n" was placed in this category. If the activity rated an "n," a statement prefaced "DC"

(Description Check) was placed in the "Comments" category to explain the discrepancy.

D. The First Subject classification refers to the first subject listed under "Subjects" in the lower right corner of the first page of each activity. A survey of activities finds it to be a fairly accurate indicator of the priority subject used in each activity. An (S) indicates science, (L) indicates language arts, (SOC) indicates social studies and (M) indicates mathematics. This classification is included to illustrate a, if not the, major subject content emphasis of the activity. The Skills Check category was provided to cross-check the First Subject classification with the actual skills used to determine if the ratio of skills that would be used was found to contain at least 50% skills which would be used in that discipline.

E. The Science Check category was used if the first subject listed under under "Subjects" in the lower right corner of the first page of each activity was not science. A (y) indicates that science is also listed, while a (n) indicates it was classified as a non-science activity.

F. The Skills Check category indicates if the proportion of skills used for science, as defined in the techno-scientific classification definition, is at least 50%. For example, "classification" is a common scientific process, while "media construction" is not. If the "first subject" is science, this category is blank. If the first subject is other than science and science is indicated in the "science check" category, the presence and relative strength of science-related activities is approximated by this category.

G. The Defined Intrinsic category indicates if "Intrinsic Value" is listed as a topic covered in the activity.

H. The Actual Intrinsic category indicates if the activity actually addresses intrinsic value. While a short rationale is usually provided in the "Comments" section, a more in-depth analysis is found in Part 4, the "data analysis" section of this chapter of the thesis.

I. The "Statement Type" differentiates "IS" from "OUGHT" statements. "IS" statements describe "what is" and provide some sort of factual information for the reader. This category is identical to the category with the same name in the statement analysis (Research Analysis #2) and a more detailed description is found there.

J. The "Value Reference" category describes the manner in which value is transfered. This category is identical to the category with the same name in the statement analysis (Research Analysis #2) and a more detailed description is found there.

K. The "Object of Value" category describes the primary object that is explicitly or implicitly valued. This category is identical to the category with the same name in the statement analysis (Research Analysis #2) and a more detailed description is found there.

L. The Comparison Correlation category notes any similarity in form or function between the AP statement, LOA or Concept Focus and the statements in Appendix A. Absence or presence of similarity is not the sole determinant in the final classification found in Part M.

M. The Activity Classification category is the final analysis, where the information from previous categories is analyzed to determine what classification the activity, on a whole, receives. The definitions of what constitutes a techno-scientific (TS), non-science and non values (NS), values transfered by humans (VTH), anthropocentric (ANTHRO), or biocentric (BIO) focus are identical to those in the Framework Classification category, exchanging only the focus from the statement to the activity level. The values neutral (VN) was eliminated from the activity classification, while a non-science/non-values (NS) classification was added.

Research Analysis #4: Analysis of Intrinsic Value Classification

Each activity listed in the Topical Index under "Intrinsic Value" was analyzed to determine if it indeed discusses the idea and meaning of intrinsic value. Historical and cultural research in Chapter Two indicates that the intrinsic value of non-humans or nature itself is a concept foreign to our Western tradition. There is no theoretical reason to believe that Project WILD users or any other people raised within an anthropocentric Western tradition are adequately equipped to explore or understand this topic. For intrinsic value discussions to go beyond an extremely superficial level, there must be explicit, detailed activities somewhere in Project WILD that directly address intrinsic value. If this is not the case, it can be inferred that all subsequent mentions of intrinsic value, if present, are inadequately addressed.

Limitations of the Methodology

Content analysis is a technique involving description and categorization of text. As mentioned earlier, it is not considered a sufficiently critical methodology by some researchers because it often does not address meaning constructed in the use of symbols and structure in a text. Many limitations of this study are the result of this problem, as described below

1. Categories within Biocentric or Anthropocentric classifications (e.g., Respect for all creatures) used in the analysis of individual activities are not mutually exclusive.

2. Absence of direct statements with respect to biocentrism does not rule out biocentric content, but it is much less likely to be present. For example, it remains possible that there is latent biocentrism or intent to transmit biocentric perspective which has not been detected. However, because Western culture, of which Project WILD is a product, has been shown to be extremely anthropocentric, it is highly unlikely that biocentrism is present except in only the weakest and most dilute forms.

3. There are statements or themes which could be classified in both categories, anthropocentric as well as biocentric, depending upon interpretation or the intent of the author. Only statements clearly anthropocentric or biocentric are classified as such. In particular, there are many cases where techno-scientific (TS) and anthropocentric (ANTHRO) orientation is detected in the same statement. The "TS" and "ANTHRO" orientations are intertwined in a culture which is based on both and therefore, it can be hard to separate the two perspectives. Guidelines for classification are found under the heading "Collection and Analysis of Data."

4. Many perspectives can be implied in communication. There is no attempt to survey for implied (latent) content except concerning "value by association," although implied content is a fundamental concern of any content analysis.

CHAPTER IV

RESULTS AND DISCUSSION

Four seperate analyses were examined to determine the philosophical orientation of Project WILD.

1. A replication Horwood's 1987 analysis of Project WILD to determine if his claims of anthropocentric bias in Project WILD are valid for the 1988 U.S. version.

2. An analysis of the conceptual framework that forms the conceptual basis for each Project WILD activity.

3. An analysis of all activities in Project Wild to determine if they have a techno-scientific (TS), non-science and non values (NS), values transfered by humans (VTH), anthropocentric (ANTHRO), or biocentric (BIO) focus or a combination thereof.

4. An analysis of those activities listed in the Topical Index of Project WILD that are specifically concerned with "Intrinsic Value" to see if they do indeed address the topic.

Research Results

Research Analysis #1: Replication of Horwood's Analysis.

Horwood's 1987 analysis of Project WILD was replicated to determine if his claims of anthropocentric bias in

Project WILD are valid for the U.S. 1988 version. All methods and definitions for the classification used by Horwood were duplicated in the current study. Horwood listed four pieces of evidence to support his claim of anthropocentric bias. They are addressed below.

Part A. A preponderance of photographs of humans, human artifacts, and animals that humans like or resemble. Horwood's analysis of the Canadian Project WILD reported a 10-to-1 (108-to-11) ratio between vertebrate and non-vertebrate photographs; 61 of the photographs were focused on mammals and 32 photographs focused on humans. Human artifacts were the primary subject of 19 photographs (see Table 1). In the current study, using the Project WILD elementary edition (1988) and Horwood's methodology, a roughly 7.5-to-1 (82-to-11) ratio was noted. Forty seven photographs of mammals were found, 22 of which focused on humans. Twenty seven photographs of human artifacts were found (see Table 2). The numbers and classifications of photographs in the invertebrate category were identical in both studies while the number of photographs of plants differed by one. Microscopic animals as well as parasites were not visually represented in either of the Project WILD versions under examination.

Table 1.

Numbers of different kinds of wild animals and other subjects portrayed in photographs as dominant subjects in Canadian (1985,1986) Project WILD.

Category of subject	Number	Totals	
Microscopic animals	0		
Insects	5		
Other arthropods	3	Total arthropods	8
Parasites	0		
Other invertebrates	3	Total Invertebrates	11
Humans	32		
Other mammals	29	Total mammals	61
Birds	35		
Other vertebrates	12	Total other vertebr.	47
		Total vertebrates	108
Plants	31		
Human artifacts	19	Total non-wildlife	50

Note. From *"Who Speaks for the Wolf? Not Project WILD"* by B. Horwood, 1987, Kingston, Ontario: Queens University, Faculty of Education. (ERIC Document Reproduction Service No. ED 297903). Reprinted by permission.

Table 2.

Numbers of different kinds of wild animals and other subjects portrayed in photographs as dominant subjects in U.S. Project WILD, 1988 Edition.

Category of subject	Number	Totals	
Microscopic animals	0		
Insects	5		
Other arthropods	3	Total arthropods	8
Parasites	0		
Other invertebrates	3	Total Invertebrates	11
Humans	22		
Other mammals	25	Total mammals	47
Birds	29		
Other vertebrates	6	Total other vertebr.	35
		Total vertebrates	82
Plants	32		
Human artifacts	27	Total non-wildlife	59

Part B. Exclusion of humans from its scheme of wildlife classification.

Activities listed in the Topic Index of Project WILD under "classification" were examined to determine if they involved classification of wildlife. If wildlife classification was the subject of the activity, the activity was examined to determine if it mentioned humans within the definition of either wild animals or domesticated animals. The current study adheres to the same methodology.

Twenty eight activities are listed in the "Skills" cross reference index in Project WILD (p.244) as focusing on "classification." In every case, humans are either not mentioned at all or they are distinctly separated from other animals, whether domesticated or wild.

An "animal" is defined in the first two activities of Project WILD as "any living organism other than a plant" (p. 1 and 3). "Wildlife" is defined in the first two activities as "any animal that lives in a basically free condition, providing for its own food, shelter, and other needs in an environment that serves as a suitable habitat" (p. 1 and 3). Under this classification, humans would be classified as both animals and wildlife. Yet humans are not classified as "wildlife" in any of the Project WILD activities. For example, the activity "Ants on a Twig" (p.9) separates "Humans, domesticated animals and wildlife." "Microtrek

Scavenger Hunt" (p.21) states that "humans and wildlife share environments" and yet separates humans and wildlife in numerous instances. In all cases, humans are separated from both wildlife and domesticated animals in classification schemes.

Part C. Lack of activities that teach the stated concept of wildlife's intrinsic value.

Horwood claimed there is a lack of activities that teach the stated concept of wildlife's intrinsic value, although each of five other stated values (scientific and ecological, aesthetic and spiritual, economic and commercial, consumptive and non-consumptive recreational, and social and political) has nine to fifteen teaching activities associated with it. Similar proportions of value activities were found between the U.S. and Canadian analyses of the Project WILD manual in all categories except "intrinsic value" (see Table 3). Horwood, using the Canadian Project WILD version, did not find any listing of intrinsic value in the Topic Index. In the U.S. version, such a listing exists. It is worthwhile to see if the activities that are listed under this topic address that topic sufficiently, and the results are described in Chapter 4, Research Analysis #4.

Table 3.

Numbers of activities listed in U.S. Project WILD's Topic Index (1988 edition) supporting each of the value concepts listed in the Conceptual Framework.

Value topic	Number of activities Canadian Project WILD (1986)	Number of activities U.S. Project WILD(1988)
Aesthetic Value	15	15
Commercial Value	15	13
Ecological Value	13	15
Historical Value	15	15
Intrinsic Value	0	11
Recreational Value	9	8

Part D. Lack of activities that either illustrate man's position in the food web or explain the place humans hold in trophic relationships.

Horwood claimed that Project WILD generally lacks activities that either illustrate man's position in the food web or explain the place humans hold in trophic relationships. This study validates his conclusion. Predation is the primary topic in several activities. However, humans are considered as a predator in only one activity, namely, "The Hunter." The concept of "food chain" is represented but the more accurate concept of a "food web" is absent. The food web is the preferable concept because it reflects the reality of multiple food sources. Activities that discuss human food are limited to considering the flow of energy through the environment and what kind of "resource" provides our energy and food. The key biocentric idea that every living animal kills to live is missing, which distorts a student's awareness of being like other animals. No activities foster awareness in students that each person relies on someone to kill their food for them. No activities show human beings as food for other wildlife.

In conclusion, three of Horwood's four concerns have been replicated in the 1988 U.S. version of Project WILD. The fourth, the presence of intrinsic value activities, is addressed in Chapter 4, Research Analysis #4.

Research Analysis #2: Analysis of the Conceptual Framework

The results of an analysis of the Conceptual Framework of Project WILD are found in Table 4. Raw data from this analysis are found in Appendix B.

Table 4.

Classification of Conceptual Framework Statements in Project WILD, 1988 Edition.

Classification	Number of framework statements
Techno-scientific (TS)	120
Techno-scientific:other	31
Values Transfer Human (VTH)	11
Values neutral (VN)	4
Anthropocentric (ANTHRO)	42
Biocentric (BIO)	6
"IS"/"OUGHT" statements	170/5
Resource management activities	66

It should be noted that "Resource management activities" is a secondary analysis category, derived from analysis of the L.O.A. and Concept Focus categories, included to illustrate a significant subcategory of LOA/Concept Focus not anticipated in Chapter Three.

Research Analysis #3: Analysis of Individual Activities.

The results of an analysis of each activity found in Project WILD are found in Table 5. Raw data from this analysis are found in Appendix C. Table 6 is a tabulation of subject headings for each activity as categorized by Project WILD.

Table 5.

Classification of activities in Project WILD, 1988 edition.

Classification	Number of Activities
Techno-scientific (TS)	50
Techno-scientific:other	21
Values Transfer Human (VTH)	18
Anthropocentric (ANTHRO)	5
Biocentric (BIO)	2
Possibly (ANTHRO)	1
Possibly (BIO)	1
Non-science/Non-values(NS)	8
"IS"/"OUGHT" statements	80/1
Resource management activities	3

It should be noted that "Possibly (ANTHRO)" and "Possibly (BIO)" are included to illustrate a significant subcategory of activity classifications not anticipated in Chapter Three.

Table 6.

Classification of activity subject headings in Project WILD, 1988 edition.

Classification	Number of activities
Science	46
Science as secondary subject	30
Language Arts	14
Social Studies	16
Math	5

Research Analysis #4: Analysis of Intrinsic Value Classification

Data collected in this study indicate that no activities in Project WILD teach intrinsic values in any meaningful way. There are eleven activities that specifically claim to address intrinsic value in the Topic Index. Six claim to do so "indirectly" (p.251, Topic Index), thereby suggesting that the other five directly address the topic. An analysis of each activity which claims to do so, directly or indirectly, yields the following results

1. "Grasshopper gravity" (p.15) hints at intrinsic value by suggesting that when students act "like scientists" and study animals, they have "power over them" and with power

comes "responsibility." There is no mention of "intrinsic value." Responsibility and "stewardship" does not imply intrinsic value because both could be justified in terms of protecting future human needs (instrumental values).

2. "Wild Words," an "indirect" activity, (p.59) doesn't contain any wording that indicates or implies any consideration of intrinsic value. Although a few poets mentioned might address the idea in their writings, those writings are not included here and no outline is given to guide a teacher to intrinsic value writings appropriate to this age group.

3. "Animal Poetry," an "indirect" activity (p.63), gives the student an opportunity to experience the "inspirational" value of wildlife via their own poetry. Inspirational value is an instrumental value as it relates purely to human needs. Nothing is offered to lead the student towards realization of intrinsic value.

4. "Museum Search for Wildlife" is an "indirect" activity (p.65) focusing on aesthetic, inspirational and spiritual value of wildlife (all anthropocentric). This activity provides no mention of intrinsic value until the "Evaluation" section. Discussing endangered species and their value, a long sentence chronicles a number of instrumental, anthropocentric values such as food and medicines, adding ". . . and as intrinsically valuable parts of our environment" at the end. No elaboration before or after is given with

regard to intrinsic value and intrinsic value to OUR environment does not imply intrinsic value.

5. "Lets go fly a kite", an "indirect" activity (p.67), focuses on the value of wildlife as an inspiration for art by making wildlife kites. There is no indication of any opportunities for understanding or valuing intrinsically.

6. "Make a Coat" (p.75) focuses primarily upon sources of clothing and whether they are from renewable or non-renewable natural resources. Although it does mention ethical considerations concerning "renewable natural resources" such as animals, or non renewable ones such as petroleum products, there is no implicit or explicit reference to intrinsic value.

7. "Here Today, Gone Tomorrow" (p.135) focuses upon classification of species that are considered rare, threatened or endangered. In the "extensions" section for younger students, questions ask, "What are these organisms `worth'?" and "What are we humans losing?" This is an anthropocentric argument because the value of these species is tied to anthropocentric concepts of "worth" unless otherwise specified, and reference to what humans lose ignores what the species themselves lose.

In the "extensions" section for older students, the following questions are asked "What will be the consequences of the disappearance of this species? What are the tradeoffs involved? What contributions does the animal make ecologically? economically? medicinally? aesthetically? intrinsically?" Intrinsic value is added at the end with no elaboration as to its meaning.

8. "The Hunter" (p.153) examines student attitudes towards hunting. While ethical considerations with regard to hunting and the "suffering of individual animals" are mentioned, no explicit or implicit reference to the intrinsic value of animals is made.

9. In "Wildlife in National Symbols" , an "indirect" activity (p.175), characteristics of plants and animals that humans find appealing (such as courage, nobility, strength, and power) as suggested as reasons why they are used as national symbols. This activity implies instrumental values. No explicit or implicit reference to intrinsic value is made.

10. "To zone or not to zone" , an "indirect" activity (p.193), simulates a land use planning hearing. Although the "local Audubon president" does have a list of rare bird species he is concerned about, there is no clue as to if he thinks they are of intrinsic value or why he might think so. An "animal rights activist" attends but his concern about hunting and cruelty does not imply intrinsic value; It is possible that aversion to cruelty is an anthropocentric (aesthetic) concern. None of the other characters indicate

intrinsic value concerns. Thirteen out of fifteen characters in this activity are concerned with self-centered or strictly anthropocentric values. No explicit or implicit reference to intrinsic value is made.

11. "Keeping score" (p.201) is primarily concerned with recognizing cause and effect relationships affecting wildlife in their communities and discussing actions that minimize harm to wildlife. No explicit or implicit reference to intrinsic value is made.

Discussion of the Findings

Research Analysis #1: Replication of Horwood's Analysis of Project WILD

Part A. A preponderance of photographs of humans, human artifacts, and animals that humans like or resemble.

Horwood's analysis of the Canadian Project WILD reported a 10-to-1 (108-to-11) ratio between vertebrate and non-vertebrate photos, with 61 pictures of mammals. In the current study, using the Project WILD elementary edition (1988) and Horwood's methodology, a roughly 7.5-to-1 (82-to-11) ratio was noted, with 45 pictures of mammals. Although the ratios are not the same, they would not be expected to be as these are slightly different versions of Project WILD. Horwood contended there is a preponderance of vertebrate animals in Project WILD photographs. He also noted that there are nearly five times more plants and human artifacts than invertebrate animals represented in Project WILD, and states that this is a severe misrepresentation of the natural world because invertebrates represent a larger part of the world both in terms of numbers and kinds by several orders of magnitude. Horwood claimed that the photographic content of Project WILD is not consistent with the actual state of affairs in the wild world but is consistent with a human-centered perspective. The results of his study have been replicated with a reasonable degree of similarity in this study. The photographs in Project WILD emphasize humans, animals that are human like, or animals that humans identify with for their "noble" or "cuddly" qualities, to a greater degree than is found in nature. His conclusion that this imbalance "quietly but powerfully promotes the anthropocentric image of the world" (Horwood, 1987, p. 9) is support for the contention that Project WILD has elements of anthropocentrism, which indicates that it might also tend to educate from a Dominant Western Paradigm perspective (Cotsgrove, 1982; Milbrath, 1984).

Part B: Exclusion of humans from the scheme of wildlife classification.

This study has verified Horwood's results. According to Horwood, excluding humans from the scheme of wildlife classification indicated that:

> we are assumed to be outside the natural system being studied despite the fact that the definition of `wild' given in the glossary clearly includes human beings. This assumption is characteristic of the human centered perspective and is not found in the biosphere centered worldview. (1987, p. 8).

This evidence of a human-centered perspective is support for the contention that Project WILD, having elements of anthropocentrism, might also tend to educate from a Dominant Western Paradigm perspective (Cotsgrove, 1982; Milbrath, 1984).

Part C. Lack of activities that teach the stated concept of wildlife's intrinsic value.

Horwood's finding that intrinsic value has been inadequately addressed, if addressed at all, has been replicated. The American Project WILD included the intrinsic value Topic heading, but the Canadian version did not do so. It is worth noting that the 1983 or 1985 American versions of Project WILD did not have intrinsic value topic headings. As Project WILD chose to mitigate many concerns by animal rights groups by adding statements to existing statements to ameliorate problems (Barnes, 1985), it is possible that Project WILD choose to act on criticism of the lack of intrinsic value activities by creating a new topic heading and assuming that existing activities would address the topic sufficiently. The activities clearly do not address the topic, as they fail to give any examples or discussion about this concept and fail to lead students or teachers distinctly in this direction. While this study does not include analysis of Project WILD's recent project, the "Aquatic" activity guide (1987), it is worth noting that there is no topic index heading for intrinsic value. This might indicate to some that Project WILD has not taken concerns about lack of intrinsic value activities very seriously. Intrinsic value is a key component in the New Environmental Paradigm, while it is foreign to the Dominant Western Paradigm. This evidence would support the contention that Project WILD might tend to educate from a Dominant Western Paradigm perspective.

Part D: Lacks of activities that either illustrate man's position in the food web or explain the place humans hold in trophic relationships.

All of Horwood's concerns have been replicated in this version of Project WILD with regard to an inadequate discussion of the place of humans in the trophic system. To exclude our actual mode of existence and rightful place in the trophic system excludes the biocentric view, according to Horwood (1987, p. 9). This evidence would support the contention that Project WILD might tend to educate from a Dominant Western Paradigm perspective

Research Analysis #2: Analysis of the Project WILD Conceptual Framework

A major focus of this study is to determine both what and how Project WILD provides information about the natural world. One-hundred fifty out of 175 framework statements tend to transmit techno-scientific information, as defined by this study. Given latitude for varying definitions of what would constitute a techno-scientific statement, it still remains clear that Project WILD has a strong bent for "the facts." There is a significant lack of activities which allow students to deal with a strong contributing factor in the environmental dilemma, namely, the crisis of values. The review of literature for this study has shown there is a large group of educators who feel this is an area which needs a significant emphasis in environmental education. If the Conceptual Framework upon which Project WILD is based lacks a strong consideration of values, then Project WILD might not have as balanced an approach as it claims or as is called for from such a widely supported curriculum. This would also strongly indicate a Dominant Western Paradigm approach, which historically has been shown to assume a questionable fact/value duality and place an overemphasis on facts as compared to values.

There was an "ought" perspective in 5 out of 56 statements which implicitly or explicitly involved some form of valuing. For example, in Statement VII.B. "Responsible environmental actions are the obligation of all levels of society, starting with the individual," the word "obligation" suggests that all levels of society, starting with the individual, ought to take responsible environmental actions. The object of value is "responsible environmental actions," or, more generally, responsibility as a valued human attribute. The remaining statements placed the value in an "is" form. For example, Statement V.A.3 reads, "Members of some cultures still depend on wildlife to supply a portion of their requirements for food, shelter, and clothing." This statement was classified as "TS:ANTHRO" because it states a fact that can be empirically proven and anthropologists who study those cultures assert is true yet also implicitly places value on wildlife for the resources they provide. Again, the fact/value distinction breaks down, and while it is doubtful that the authors intended to make this a value statement in the form of an "is" or fact statement, they have. This paragraph illustrates how an implicit value statement can be hidden in a fact statement. It also illustrates how infrequently the student is told they "ought to" or "should" adopt an action or attitude concerning the environment. This is consistent with the Project WILD goal of not telling students what to think but how to think (WREEC, ix). This is also consistent with the values clarification strategies popular in the 1970's and 1980's which place the emphasis on the process of valuing and not the values themselves. However, values clarification has been suggested as being insufficient to deal with the challenge of today's environmental crisis. Baer (1980, p. 13-15) maintained that values clarification methodology is "theoretically weak" and among other criticism, that it "involves a form of indoctrination in radical ethical relativism." Values are implicitly being taught, according to Devall and Sessions (1985, p. 181-182), values which are not necessarily healthy or sustainable. Therefore, some suggest it might be time to take a stronger stance and prescribe positive environmental attitudes. This thesis has attempted to illustrate that Dominant Western Paradigm cultures implicitly teach a value/ethical relativism as part of the techno-scientific worldview (see Chapter 2). The lack of prescriptive or "ought" statements supports the contention that Project WILD is firmly linked to a techno-scientific and Dominant Western Paradigm worldview.

The analysis of the Conceptual Framework also indicates that when Project WILD does address value, it tends to do so implicitly. Only six statements explicitly deal with value. Five of these value statements refer to anthropocentric values. The sixth, referring to a biocentric value, intrinsic value, is the only one which is qualified.

In eleven cases, value might have been transfered to wildlife or non-humans by referring to the similarity with humans of form, function or needs. This is an anthropocentric valuing. However, since it is a very subtle implied valuation, it was not listed in the anthropocentric category and was placed in a separate category, namely, the (VTH) category. A primary function of the VTH category is to suggest that the reader or authors take notice that the statements listed here might easily transmit an anthropocentric value impression to students. It is possible that the intention of the authors was merely to increase the degree to which children identify with the animals. This is a positive and worthwhile action, if and only if there is sufficient and persistent action to also foster a sense of the intrinsic value of non-humans. Without doing so, the student maintains a human-centered perspective and anthropocentric attitudes are fostered.

Statements were classified as anthropocentric or having anthropocentric components in 42 out of 175 cases. Often these were in statements that were also "fact" statements, but which implied a strongly human-centered perspective. Statements were classified as biocentric or having biocentric components in 6 cases. There is serious imbalance in the anthro/bio ratio and this would suggest a Dominant Western Paradigm orientation.

Finally, a Resource Management category was included to illustrate a significant subcategory of LOA/Concept Focus not anticipated in Chapter Three. Sixty-six out of 175 statements address Resource Management concepts, attitudes or information. This might be expected from a curriculum strongly supported and guided by resource management agencies. However, it is questionable if the goals of neutrality and non-alignment on issues, as stated by Project WILD, are fostered by this emphasis. As this thesis points out, the field of resource management has been criticized for many of its unquestioned assumptions. The emphasis on resource management concepts, because they have been shown to exhibit many Dominant Western Paradigm assumptions, also supports a Dominant Western Paradigm classification for Project WILD as a whole.

Research Analysis #3: Analysis of Each Activity in Project Wild

The intent of Research Analysis #3 was to determine if the concepts, orientation, and philosophy of the Conceptual Framework had been translated into a working program for students. By all indications, they have. Table 7 compares the relative proportions of each type of classification in comparison to the total number of framework statements or activities.

Table 7.

Comparison of Conceptual Framework and activity classifications in Project WILD, 1988 edition.

Classification	Framework Ratio	Activity Ratio
Techno-scientific (ts)	.85	.87
Values Transfer Human (vth)	.06	.22
Anthropocentric (anthro)	.21	.06
Biocentric (bio)	.02	.02
Is/Ought	.97	.98

The activity classification scheme was more complex because one sentence could not be used to accurately gauge the orientation of an activity. Multiple "checks and balances" were designed into the activity classification scheme to get as close to the orientation of an activity as possible. The framework and activities were classified at separate times, reclassified and checked for consistency. The correlation between categories is remarkable, and even the anomalie, the vth/anthro categories, are remarkable for the exactness of their exchange of ratios from the framework analysis to the activity analysis. Table 6 indicates that

Project WILD classifies 76 out of 81 activities as teaching science, which is an even higher proportion of technoscientific activities than either the Conceptual Framework or activities analysis indicated. Data from Research Analysis #3 correlates with evidence in Research Analysis #2 and supports the conclusion that Project WILD would tend to take a Dominant Western Paradigm approach to solving environmental problems instead of a New Environmental Paradigm approach.

Research Analysis #4: Intrinsic Value Analysis

This analysis has been extensively addressed in previous sections of Chapter 4. None of the activities listed in the Topic Index under Intrinsic Value address the topic in a meaningful way. No indication of a meaningful discussion of intrinsic value in activities not listed in the Topic Index was found. The results are a last and final indicator to support the contention that Project WILD is less than complete and might tend to have a perspective which is highly influenced by the Dominant Western Paradigm.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

The major purposes of this investigation were:

1. To analyze Project WILD in order to determine whether or not predominantly Dominant Western Paradigm or New Environmental Paradigm thinking is reflected in the content of the curriculum guide.

2. To analyze Project WILD in order to determine whether or not predominantly anthropocentric or biocentric thinking is reflected in the content of the curriculum guide.

Two original hypotheses were postulated:

1. Project WILD is not written with a predominantly Dominant Western Paradigm perspective (as indicated by an anthropocentric and/or techno-scientific emphasis) or a New Environmental Paradigm perspective.

2. Project WILD is not written with a predominantly anthropocentric or biocentric orientation.

Four research questions were investigated:

1. Were Horwood's (1987) conclusions concerning an anthropocentric emphasis in the Canadian version of Project Wild (1985,1986) valid for the 1988 U.S. version?

2. What is the orientation of the Conceptual Framework of Project WILD Dominant Western Paradigm or New Environmental Paradigm, anthropocentric or biocentric, or none of the above?

3. What is the orientation of the individual activities in Project WILD Dominant Western Paradigm or New Environmental Paradigm, anthropocentric or biocentric, or none of the above?

4. Do those activities listed in the Topical Index of Project WILD that are specifically concerned with "Intrinsic Value" address the topic adequately to give it meaning?

The conceptual framework of this thesis links the Dominant Western Paradigm to anthropocentrism and beliefs about science and technology, while the New Environmental Paradigm is linked to a biocentric perspective and beliefs about science and technology that are converse to those of the Dominant Western Paradigm.

The Dominant Western Paradigm provides non-human species value only as a "resource" to humans, which is an anthropocentric attitude (Ehrenfeld, 1978; Devall and Sessions, 1985; and others). This paradigm also exhibits a strong confidence in science and technology (Cosgrove, 1982), the belief that the environment is controllable or manageable to provide ample reserves for human use (Milbrath, 1984) and the belief that science is intrinsically objective and technology is best standardized and used at the highest attainable level (Cosgrove,1982 and Bogen,1985). There is also a strong belief in the separation of fact and value, thought and feeling which is a belief necessary to conduct "objective" scientific research. The problems with Dominant Western Paradigm thinking, and alternatives to the DWP ways of knowledge, have been thoroughly explored in the writings of Deep Ecology and the Deep Ecology-inspired research in this thesis.

If Project WILD is shown to value wildlife and non-human nature in a predominantly anthropocentric manner, this indicates that Project WILD has a Dominant Western Paradigm (DWP) orientation. If Project WILD is shown to have a strong techno-scientific emphasis, as illustrated by a predominance of science activities or belief that nature is best managed and controlled, this indicates that Project WILD has a Dominant Western Paradigm orientation. The presence of these attitudes rules out a predominantly New Environmental Paradigm (NEP) emphasis in Project WILD because the NEP and DWP perspectives are mutually exclusive.

Content analysis methodology was used to determine the orientation of Project WILD. Horwood's analysis of the Canadian (1985,1986) version of Project WILD was replicated. Coding and categorization of critical indicators in the Conceptual Framework and in individual activities was compiled. Pre-testing of the coding scheme was conducted on a number of curricula other than Project WILD and categorization of comparison statements were validated by expert and non-expert opinion. The results of the study indicate that Project WILD exhibits both a predominantly Dominant Western Paradigm and anthropocentric perspective as compared to a New Environmental Paradigm and biocentric perspective.

Significance of the Study and Conclusions

Four research analyses were undertaken in this thesis. The significance of each is discussed below.

Research Analysis #1: Replication of Horwood's Analysis of Project WILD

Three of Horwood's four concerns have been replicated in the 1988 U.S. version of Project WILD. A preponderance of photographs of humans, human artifacts, and animals that humans like or resemble exists in Project WILD. Humans are excluded from the scheme of wildlife classification in Project WILD. Project WILD generally lacks activities that either illustrate the human position in the food web or that explain the place humans hold in trophic relationships. Horwood's fourth concern, Part C of his analysis, which concerns the presence of intrinsic value activities, is not explicitly validated because he surveyed only for activities explicitly labeled as such in the Topic Index. He contended that anthropocentric values of wildlife were addressed in a significantly greater proportion of activities than biocentric or intrinsic values. In the U.S. 1988 version of Project WILD, an "Intrinsic Value" category appeared which stated that existing activities addressed intrinsic value. Since Horwood limited his analysis to the Topic Index, his findings were not validated in the U.S. 1988 version of Project WILD. However, the spirit of his concerns were, and are addressed in Research Analysis #4.

Research Analysis #2: Analysis of the Project WILD Conceptual Framework

This research indicates that 150 out of 175 framework statements tend to transmit techno-scientific information. This indicates a strong emphasis on science "facts" and an underemphasis on values. A prescriptive approach to values ("ought vs. is") is found in only 5 of 56 statements addressing some form of values or valuing. This indicates a possibly ethical relativistic stance and might contribute to the absence of a defined set of positive environmental values. Statements were classified as anthropocentric or having anthropocentric components in 37 out of 175 cases, while 5 biocentric statements were found. This shows a serious imbalance of orientation and indicates that the Conceptual Framework of Project WILD is anthropocentrically biased. Combined with the other findings of Research

Analysis #2, a Dominant Western Paradigm orientation is indicated in the Conceptual Framework of Project WILD.

Research Analysis #3: Analysis of Each Activity in Project Wild

This research indicates that 71 out of 81 activities in Project WILD tend to transmit techno-scientific information. This indicates a strong emphasis on science "facts" and an underemphasis on values. A prescriptive approach to values ("ought vs. is") is found in only 1 of 28 statements addressing some form of values or valuing. This indicates a possibly ethical relativistic stance and might contribute to the absence of a defined set of positive environmental values. Statements were classified as anthropocentric or having anthropocentric components in 5 out of 81 cases, while 2 activities that were biocentric or had biocentric components were found. This shows an imbalance of orientation and indicates that the individual activities of Project WILD are anthropocentrically biased. It should be noted that a significant percentage of activities (22 out of 81) are highly suspect of transmitting anthropocentric attitudes as it is likely that they transfer value via humans. Combined with the other findings of Research Analysis #3, a Dominant Western Paradigm orientation is indicated in the activities of Project WILD.

Research Analysis #4: Intrinsic Value Analysis

None of the activities address the topic of intrinsic value in a meaningful way and it would seem as if the term had been lightly sprinkled into the Conceptual Framework so as to include it in the curriculum. If a teacher or student wanted to understand why it was included at all, they would have no resources to draw from, including a definition in the glossary or even one sentence to explain what "intrinsic value" might mean and why such a value is important. The importance of intrinsic value has been extensively addressed throughout this thesis and is a critical issue in environmental ethics and philosophy today. It is difficult to speculate why such an important topic can be so superficially covered or dismissed. It is a last and final indicator to support the contention that Project WILD is less than complete and might tend to have a perspective which is highly influenced by the Dominant Western Paradigm.

Support/Rejection of Hypotheses

The results of this study indicate that both Hypotheses 1 and 2 should be rejected. Evidence supports the contention that Project WILD has a predominantly Dominant Western Paradigm orientation. Further results indicate a predominantly anthropocentric orientation in Project WILD.

General Conclusions and Recommendations

The results of this research indicate that Project WILD is biased towards a Dominant Western Paradigm perspective. Further results indicate a predominantly anthropocentric orientation in Project WILD. The Dominant Western Paradigm has been shown to be a limited and seriously flawed perspective, one which is not likely to provide a sustainable environmental worldview. Therefore, the Dominant Western Paradigm, and its most prevalent indicators, anthropocentrism and an overreliance on science and technology, must be eliminated from Project WILD. Project WILD must shift towards a New Environmental Paradigm perspective if its goal is to provide for a sustainable environmental worldview and support the lifestyles that such a worldview necessitates. What is implied here is not a more "balanced" approach, using a mix of DWP and NEP perspectives, but a more honest view of our environmental problems and their possible solutions. If Project WILD's goal is to support the status quo of "humans over nature" and provide children with a resource management approach to environmental problems, it should state that as a goal. As such, it would need very little modification to achieve that goal. If Project WILD is to be the predominant source of environmental activities for children, which implies sustainable solutions to environmental problems, it has to go beyond the claim of "not advocating any particular perspective." Instead, Project WILD needs to take a perspective. The perspective taken should be an NEP perspective, rather than a DWP perspective, as the one which is more likely to provide those solutions.

Project WILD will probably not change in philosophical orientation overnight. A New Environmental Paradigm perspective can be reached in a series of steps, however. The first of which is to explore both the DWP and NEP. The steering committee of Project WILD should solicit input from experts who are familiar with the two perspectives, as well as from environmental ethicists and practitioners of non-anthropocentric environmental values. If the steering committee, after careful and lengthy examination, believes that the NEP and non-anthropocentric ethics and values are compatible with the ultimate goals of Project WILD, they can modify the stated philosophical goals and approach of the curricula to one willing to take an NEP position. Taking an NEP position may, at first "raise some eyebrows," but will ultimately have a better chance of providing a sustainable environmental ethic. Suggesting that humans are not the locus of all value in the universe and that they are not all-powerful to solve problems in traditional ways, will certainly raise some eyebrows. The situation is directly analogous to that of Copernicus when he suggested that the Earth was not the center of the universe and that the Planet Earth actually revolves around another heavenly body, the Sun. He met violent opposition because his suggestion also implied that we as humans, made in the image of God, were not the center of the universe. However, even if resistance is met, a more honest and accurate perspective of the place of humans in the universe was necessary then, and more acutely so now.

Changes to Project WILD activities should be preceded by an analysis of what paradigm perspective exists in current editions, utilizing this research and other analyses to target DWP or anthropocentric activities for modification or elimination. Effort should be taken develop new activities with an NEP or biocentric perspective. The next step would be to make substantial changes to the next edition of Project WILD.

For example, Project WILD suggests that it teaches children "how to think, not what to think." Because this research shows that Project WILD actually does tell students what to think by not providing other perspectives, it could drop this objectivist philosophical base and provide an increasingly NEP perspective, making major strides in 2 or 3 editions released in rapid succession. This incremental approach would try and maintain a truly more objective position by adding activities which would allow students to explore other cultures which provide a more NEP perspective. The lack of activities which address non-DWP based cultures (e.g., Native American) is conspicuous in Project WILD. This incremental approach would also provide numerous opportunities for students to provide themselves and our culture with a new, indigenous NEP perspective. A new activity, for example, might be added that allows students to examine assumptions we have as a culture. An activity which looks at a question such as "Do animals have the same rights as humans"? or "Does having more toys mean that you will be happy, healthy, and have clean water to drink"? could be a starting point in providing alternative points of view.

The incremental approach to improving Project WILD is not recommended as the best alternative because environmental problems are acute. The preferred approach is a major revision of Project WILD in the next edition, saving precious time, money, "resources" (e.g., paper) and hopefully precious environment in the long run by moving towards the roots of environmental problems as quickly as possible. Retired Senator Gaylord Nelson, the "father of Earth Day," stated, "The biggest environmental problem facing the nation is not garbage, global warming or nuclear waste, but a lack of an environmental ethic" (Graf, 1990, p.3b).

Implications for Future Research

Our culture, as well as many others on the planet, operates, often unconsciously, with a Dominant Western Paradigm worldview. The Dominant Western Paradigm, as we have explored, has been very successful in providing humans with great material comforts and a scientific understanding of the world around us. It has also failed to provide us with either a worldview or lifestyle which is sustainable and considerate of the other forms of life that share our planet. It will be hard for a DWP-based culture to examine and repudiate their worldview and history, even if it were found to be an inadequate or a fatally-flawed perspective, because it is all they know. There is also a tendency to consider cultures that do not subscribe to the DWP "primitive." In actuality, a post-DWP perspective is called for, even if some of the wisdom for this perspective comes from these "primitive" cultures not tainted by the DWP. It is possible that motivating humans to examine the DWP is the great challenge which lies ahead.

The intent in this thesis is not to portray science as "bad." The author has a life-long love of science, an Earth and Physical Science educational and teaching background, as well as a belief that we are "all in this together." The "great debate" concerning knowledge vs. values as the predominant environmental education approach has an illustrious history. Environmental knowledge is critical for informed environmental decision making. The problem with a predominantly "scientific" approach is that it often leaves out or skims the supposedly subjective and difficult-to-address ethics and values elements and is therefore severely limited in addressing the roots of our environmental problems. Horwood (1989) suggested that environmental education efforts thus far have not helped much, and we have succeeded only in making "smarter, better informed polluters" (p.2). He cited the Report of the Conservation Council of Ontario (1986) to support this contention, and suggested that "You can't make a new hole by digging the old hole deeper" (Horwood, 1989, p.2). Science and technology, from the first domestication of animals and tool use, to modern activities, has allowed us to live in places which could not previously sustain human habitation, exceed the carrying capacity of our land, overpopulate the earth and use a vast amount of "resources" in a comparatively short time, thereby polluting the environment and eliminating other species at unprecedented rates. We risk having too much of a good thing in our use of science and we limit our efforts to educate environmentally by perceiving science as the exclusive way to address our problems.

Science is so much a part of the dominant worldview, and there is so much emphasis on teaching it more effectively, that to question it and the use of "objective knowledge" might seem very "backward" and "anti-progress." The notion of progress itself, via science, is deeply infused into the collective psyche of Dominant Western Paradigm humans. A world without the "progress" and the steady and progressive advance of human potentials that characterizes the last three centuries is unimaginable.

For environmental education in the form of Project WILD to become widely accepted in the first place, a cautious approach might have been necessary. Environmental education has the characteristics of an innovation and innovations are often slowly evaluated and adopted into educational systems. It is possible that paradigm orientation issues (those involving worldview as well as, economic, religious and political pressures on the environment) could not have intentionally been addressed in the years in which environmental education has struggled for validation, even if the level of awareness about paradigms and cultural worldviews was greater. A conservative diffusion strategy might have been necessary when Project WILD was first introduced, based on the belief that adoption of a curricula with a focus on non-controversial (mostly science) concepts will lend initial credibility to the guide, thereby allowing a focus on more controversial or difficult issues in the future. A curriculum which was found too threatening or advocating too much change to powerful social, political or economic groups in society could have had little chance of widespread adoption.

Project WILD provides a Dominant Western Paradigm perspective, as illustrated by an anthropocentric and techno-scientific emphasis. This perspective might have been considered necessary for Project WILD to reach and affect both teachers and students. It would have been hard to convince teachers, students and administrators that there is another way of looking at the world if they have never been exposed to it. Awareness about environmental problems and the need to educate environmentally both needed time to come to fruition. Many developments indicate that the time for a change in perspective is upon us. The greater public awareness about the environment, the spread of Deep Ecological thinking, a growing animal rights movement, a strong renewal of popular interest in ethics, and strong criticisms by some enviromental activists of mainstream environmental groups, which were considered anything but status quo when Project WILD was first developed, all point towards a new way of looking at our place in the world.

It has been suggested that Project WILD has become such a strong component of environmental education diffusion that it is time to expand Project WILD to include a truly unbiased and well-rounded environmental education approach. Some might suggest that a suitable alternative is to discontinue the extensive public funding of the program as the "institutional answer" to our problem. Most teacher training in environmental education involves Project WILD, as it is paid for primarily by the resource agencies which support Project WILD. The loss of this "free lunch" could prompt the educational establishment to take a more active role in environmental education. Stegenthaller (1986, p. 5) suggested that some state environmental education associations appear to have become "virtual hostages" to Project WILD funding because so much of their limited financial support comes from monies allocated for activities focusing on Project WILD and provided by the sponsors of Project WILD. He suggests that they have lost all ability to be impartial and critically examine Project WILD or to give other curricula with another approach a try. This is a criticism which has been echoed by other environmental educators (Van Matre, 1988).

In the opinion of the author, Project WILD has given the field of environmental education a tremendous boost, introducing environmental education into many classrooms and providing many teachers with their first exposure to environmental education. Many of the activities are fun, effective and very popular with teachers and students. Project WILD is an important start, but without a re-evaluation of its perspective and purpose, it may fail to offer the breadth of perspective and honest coverage of issues it strived for in its inception. If Project WILD is to be used to foster a more accurate sense of an ethical and sustainable place for humans in a healthy environment, it has to go beyond the claim of "not advocating any particular perspective" (while providing a DWP and anthropocentric one) and take an NEP perspective as the one more likely to provide that situation.

Explicit suggestions for changing Project WILD are given in the "Comments" section of the activity analysis (Appendix C) and in the previous section of Chapter 5. Many suggestions for modification have been implied in this thesis. There is a great potential for Project WILD to modify and expand the curriculum guides to take a more biocentric and New Environmental Paradigm perspective, ideally, a predominantly NEP or biocentric one. This will occur only if there is a strong commitment to affect real, structural changes. Adding new topic categories or mitigating statements will not suffice. Project WILD should be revitalized with careful attention to a balance of science and values while eliminating anthropocentric biases. It should be noted that eliminating the DWP does not mean eliminating science. The DWP is biased towards a techno-scientific "fix" and a corresponding set of attitudes. The NEP utilizes science while not relying on it almost exclusively for answers to problems. The NEP perspective necessitates a careful examination of scientific assumptions and solutions, and an examination of the values and locus of value which a scientific solution would select from and support, before action was taken. The NEP perspective repudiates the fact/value dichotomy and allows a more honest perspective about the world.

There is a great need for further analyses of Project WILD for content and orientation. In addition, there is a need for replication of the findings of this study by other researchers.

It is the author's opinion that environmental education, in general, is plagued by many of the same limitations and constraints as Project WILD. As it stands now, in the author's opinion, many environmental education programs are little more than "outdoor science camps" where a county board of education or local school can send their children for a week (at most, often only on a day-long field trip,) in sixth or seventh grade, thereby fulfilling their "commitment" to environmental education. The extremely limited amount of time that most students are exposed to learning in, about and for the environment, in the presence of professionally-trained environmental educators, is a reflection of the low priority placed on environmental education which Jankowski (1975) described. This could be expected from the reductionistic, techno-scientifically oriented educational establishment which provides the students, and therefore the financial support, for these programs. Suggestions that students could adequately receive their complete laboratory science, music or computer programming education in one week would probably be dismissed as ludicrous. Yet, a discipline which strives to educate students for a world that can sustain all other academic and personal human pursuits as well as support other species is offered a week (maximum) in "nature's classroom" to do so. The traditional classroom allows only a vicarious, cerebral identification with nature and is inadequate to the task at hand. Our educational system provides increasing amounts of costly computer facilities to student programers because, although they can generate programs on paper, they need to experience how the "real thing" works. Music students are provided with instruments, although they might learn or compose without them, because the value of direct experience is understood. Finally, vast sums are spent to provide busing for athletic events, but getting a bus for regular environmental fieldtrips can be impossible in many public school districts. Van Matre's (1988) summary of the situation, "Supplemental and infusion has turned out to equal superficial and ineffective," takes on a new meaning when applied to environmental education programs. While these opinions are based on primarily empirical observations, this highlights an abundant opportunity and need for research on:

1. the presence of the Dominant Western Paradigm in the structure and curricula of environmental education programs,
2. the amount of time students spend in environmental education programs in the course of a twelve-year public education, and
3. the limiting factors for the success of environmental education programs staffed by seasoned, professional, environmental educators.

These opinions regarding environmental education are relevant to this study because Project WILD plays such a key role in these programs. If the mechanistic, techno-scientific model of education, as outlined in Chapter Two (Sessions, 1983; Bogen 1985), serves to perpetuate the status quo by offering children radically limited environmental education opportunities, the content and orientation of the predominant curricula is that much more critical. If a student's limited opportunity to learn environmentally is dominated by a techno-scientific, anthropocentric approach, (where they play games to illustrate concepts they can learn in the classroom), the amount of time dedicated to valuing the environment in a more holistic and sustainable way might be reduced to radically ineffectual levels. A more holistic environmental education would explore the psychological and social roots of our environmental problems, and most importantly, provide extended time in nature to experience and identify with it, not just learn about it intellectually. Low levels of support for environmental education are reflected in programs that must rely on volunteers, interns and instructors who are trained in a week or two, and paid so poorly that they must eventually move on to a more sustainable livelihood. It is possible that this creates a situation where instructors might not have the experience or support to move themselves or students to the levels of environmental consciousness from which meaningful environmental change can occur, even if they were given the time with the students to do so. If the biases of Project WILD are reflected in the majority of environmental education programs, both must be changed for an honest attempt to educate, free of the limitations of the Dominant Western Paradigm. Finally, if the structure of environmental education programs are defined by the needs of the reductionistic, techno-scientifically oriented educational establishment, Project WILD may meet resistance in providing a less biased curricula from programs and school systems which avoid "controversial subjects" (for fear of loss of public support). In that case, the implications of this study may go unheeded.

In the opinion of the author, from the perspective of Deep Ecology and a more socially-critical approach to environmental education, students should be provided the opportunity to explore:

1. environmental attitudes from a cross-cultural perspective,

2. the relationship between industrial meat production and environmental degradation (see Robbins, 1987; and "Earth's friends," 1990),

3. their own "ecotopian" vision of the world they would like to inherit, and

4. the necessity of human population control for the maintenance of viable populations of other species.

"Chevron cares..." because appreciating wildlife is relatively non-controversial. No commitment to deep structural change is necessary on their part and the status quo can be maintained while critical issues, such as the need for deep structural change, are ignored. Possibly the days of "Woodsy the Owl," however short and sweet, should be over. Identification with nature, as defined within the limits of the DWP worldview, is already a success. Perceiving environmental education as an opportunity to raise science scores or have a short outing is also an outmoded and negligent approach. Unless environmental education is willing to address the "hard issues," those involving change of lifestyle, population control, finding a sustainable economic system inclusive of a healthy environment and maximum biological diversity, etc., we are doing all living things a disservice. Children are acutely aware of the environmental crisis, to a greater degree than most adults give them credit. They are maturing socially at earlier ages than in the past, or at least taking on more mature postures. There are ways to address the difficult issues at any grade level without becoming too "serious." Extended opportunities to bond with nature at an early age is most critical and will provide children with a natural reason to confront their place on the planet while young. It will also prepare them to do so in a deeper way as they mature. The purpose of the "rite of passage," an institution trivalized or all but forgotten in our culture, served a similar function. It is not beyond reason to expect our culture to allow pubescent and pre-pubescent children, who have no cultural tradition of a connection with the earth, an opportunity to reclaim a tradition of exploring their relationship with all of life. Addressing the issues listed above, in a depth that is proportional to their grade level, will give children an opportunity to confront issues and choices they are aware of but are powerless to articulate without an opportunity to do so. Not to provide that opportunity is to fool ourselves into thinking we educate for the world which they will inherit.

Criticism of environmental education programs should not be construed as a reflection of the author's opinion of environmental educators, administrators, or the programs themselves. In the author's opinion, the vast majority of environmental education practitioners have a holistic, altruistic vision of offering their students an education that fosters a sustainable and healthy environment. This is evidenced by the degree to which they are willing to work long hours and develop creative, educational experiences for minimal pay. Environmental educators, administrators, and the programs themselves are constrained by the ideologies, attitudes, and priorities of their primary funding sources, the greater educational establishment.

In the author's opinion, serious problems that warrant research in the field of environmental education are:

1. The low priority for environmental education in state education budgets.

2. The low pay, long hours and lack of professional status, treatment and "dignity" for environmental education instructors.

3. The inability of one week in nature (e.g., resident environmental schools), regardless of the paradigm from which the activities originate, to affect the desired change in students.

4. The extent to which other countries are plagued by the same environmental education problems as the United States.

5. The extent to which other curriculum materials have a Dominant Western Paradigm orientation.

6. The extent to which environmental education curricula or programs use a cross-cultural approach and to determine what techniques, solutions and perspectives other cultures have to offer environmental education.

7. The extent to which it is possible to develop effective, biocentric, New Environmental Paradigm-based environmental education curricula.

8. The presence of the Dominant Western Paradigm in the structure and curricula of environmental education programs.

9. The amount of time students spend in environmental education programs in the course of a twelve-year public education, and,

10. The factors limiting the success of environmental education programs staffed by seasoned, professional, environmental educators.

Limitations and Weaknesses

The limitations and weaknesses of this study are primarily in the constraints of the methodology, the innovative nature of the topic, the ambitious scope of the research and the inability of this researcher to do a more extensive analysis. The lack of precedence in a paradigm analysis of educational materials necessitated developing, defining, and refining research categories and methods. This task, as well as compiling a literature review which is interdisciplinary and extensive, exceded the author's time expectations and possibly the demands of the average Masters thesis. Therefore, important issues were left unexplored. A larger and more extensive study, with more opportunity to explore related topics, as well as verify and replicate results, is desirable.

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APPENDIX A

APPENDIX A

COMPARISON STATEMENTS

Biocentric

Non-hierarchical RESPECT for non-human nature

1. Humans should respect all other organisms whether or not they are of obvious value.

2. You should honor animals for their own particular qualities

3. All animals are "kin," therefore you should treat them as relatives.

4. There shouldn't be a hierarchy of respect for other organisms.

5. All creatures are of equal worth and created equal in nature.

6. If humans have a "right" to harvest animals, animals have a "right" to harvest humans.

7. There is no relevant difference between humans and other animals as moral subjects.

8. Humans and other animals should share basic legal rights.

Anthropocentric

Hierarchical RESPECT for non-human nature

1. Humans need not respect non-human nature whether or it is are of obvious value.

2. You need not honor animals for their own particular qualities.

3. All animals are not "kin,"therefore you can treat them as you please with no ethical restraint.

4. There should be a hierarchy of respect for non-human nature based on similarity to humans or the ability to meet human needs.

5. All creatures are not of equal worth and created equal in nature.

6. Though humans have a "right" to harvest animals, animals do not have a "right" to harvest humans.

7. There is a relevant difference between humans and other animals as moral subjects.

8. Humans and other animals should not share basic legal rights.

Anthropocentric

Humans as the center of concern

(Underline means you can substitute other values or things)

1. We have to protect wildlife because of a human need.
2. Human needs are more important than animal needs.
3. Humans will use resources for their needs regardless of the impacts on other forms of life.
4. Human life is precious beyond all others.
5. The human perspective is the only perspective there is.
6. If we don't take care of nature, we will wipe ourselves out.
7. Humans need to use resources and that will impact animals but let's minimize it because we like animals.
8. Humans will cause species extinction but let's minimize it.
9. Humans should "husband" or conserve resources for later use.
10. All non-human objects are potential resources which can be called upon when needed.
11. Non-human objects are of primary value for their potential use by humans as a "resource."

12. Humans have a right to manipulate environments to meet their needs at the expense of other organisms.

13. "self" with small "s"; self defined narrowly to include only a person and identification with family, nation, other humans etc. No recognition that everything "you" are is determined by relationships with the environment.

14. Humans can and should manage populations of non-humans by "harvest" to provide for more or greater "harvests."

15. What will humans lose if we lose the panda ?

16. The loss of species is of concern because we will lose scientific values.

Biocentric

Biosystem as the center of concern

1. Human needs do not overrule the needs of the biosystem.

2. The loss of species is of intrinsic concern.

3. All life forms are precious in the biosystem.

4. A focus on the long-term maintenance of the biosystem outweighs short-term human concerns.

5. The biosphere could stand far less humans.

6. Human population and the use of technology is creating a dangerous strain on the biosphere.

7. A healthy ecosystem can't survive over the long run in an unhealthy biosphere.

8. Humans need to understand that they are only pieces of a larger "puzzle"; they shouldn't be the focus of attention.

9.The functioning of the earth as a biosystem needs to be understood more clearly, but this shouldn't keep us from acting on what we know now to meet goal of a long-term stable biosphere.

10. No organism has the right through specific actions or shear numbers to impact the biosystem to such an extent that it endangers the system as a whole.

11. Personal identification with the "Self" of the large "S", which extends beyond boundaries of skin and traditional human allegences. "Self" recognized to include all living things and the environment.

Biocentric

Intrinsic Value

For a statement to portray intrinsic value, it must, at a literal level, include a statement of the intrinsic value of non-human nature. Underlined words indicate substitution of another non-human animal or value is possible.

1. Animals have value to each other or to the system, regardless of value to humans.

2. All animals are "kin," therefore we must treat them that way, with respect.

3. Our views of a non-human object's "value" shouldn't be regarded as their actual value.

4. Everything is an end in itself and/or everything is a means to an end, as long as it applies to all beings equally.

5. Wildlife has value in itself; it needs no relationship or connection with humans to define a value.

6. Wildlife has intrinsic value.

7. Muskrats are important because muskrats are important.

8. Wildlife has value as wildlife.

Anthropocentric Instrumental Value

In anthropocentric statements, non-human nature is often valued only as an instrument to meet human needs or ends. The statement is, at a literal level, a statement of instrumental value. Underlined words indicate substitution of another non-human animal or value other than intrinsic is possible. Only intrinsic value is a non-instrumental value.

1. Wildlife has value only in relationship to other things; in other words, it has no intrinsic value.
2. Wildlife is a resource for human use.
3. Wildlife has aesthetic value.
4. The primary value of wildlife is _____.
5. All things must be "used," otherwise they are "wasted."
6. Muskrats are important because they are a source of furs.
7. The main value of cows is for milk.
8. Wildlife has value as a symbol.
9. Wildlife is used for food.
10. Humans are dependent on wildlife for entertainment.
11. Humans and bears have need for water, therefore water is of value.

Biocentric

Humans inside Nature

1. Humans are placed in "food web" activities.
2. Humans are seen as obeying/responding to natural laws and limitations.

3. Humans are related to everything else, evolutionarily or temporally; not as an "end" product but part of process.

4. Humans are seen as not "in charge", not "stewards."

5. Humans affect, and are affected by, other animals.

6. "Self" is defined broadly (to indicate relationships w/nature).

7. Humans are classified as animals, formally or contextually.

8. Humans are classified with all other living creatures.

9. Humans have a questionable right to manipulate nature.

10. Humans need to extend respect and ethical considerations to other creatures.

11. Humans are not different in "kind",only in degree from non- human nature.

12. Humans can not really own nature or its component parts.

13. Wilderness or "wild" creatures are as valuable as domesticated objects for different but equally valid reasons.

Anthropocentric

Humans outside and above nature

1. Humans are not placed in "food web" activity.

2. Humans are not subject to same natural laws, limitations or rules as non-humans.

3. Humans are not classified as animals, formally or contextually.

4. Humans are classified differently that all other living creatures.

5. Humans can and should manipulate nature.

6. Humans need not extend respect and ethical considerations to other creatures.

7. Humans are different in "kind" from non-human nature.

8. Humans can own nature or its component parts and use it as they see fit to benefit themselves.

9. Wilderness or "wild" creatures are not as valuable as domesticated objects.

10. "self" defined narrowly, not extending outside physical body or including relationships w/ non-human nature.

11. humans have not evolved from other animals.

12. humans have a "right" to make animals their pets.

Techno-scientific

1. Human impacts are caused by _____________.

2. (Ecological or biological term) is essential for living things.

3. Adaptation occurs in all animals.

4. Students should recognize the importance of (ecological or biological concept).

5. Shelter is important to all living things.

6. All components of _________ are important.

7. ____________ is caused by ______________.

8. All living things tend to ______________.

9. (Living thing) is valuable for ___________.

10. ____________ will affect _______________.

11. Students should recognize that ___________.

12. (Statement which states a fact).

APPENDIX B

APPENDIX B: FRAMEWORK ANALYSIS

KEY

A= Framework Code B= Statement type C= 1. LOA 2.Concept Focus

D= Value Form E= Value Reference F= Object of Value

G= Framework Classification H= Comments

Note: Key listing scheme differs from scheme in thesis body

ABBREVIATIONS

Cons.=conservation

E. Sp.=endangered species

Ha=Habitat

HWR=human and wildlife relationships

Mgt.=management

NR=natural resources

res.=resources

RM=resource management

Sp.=species

w=wildlife

W&H= wildlife and humans

WM=wildlife management

WR=wildlife resources

WRHA=wildlife and responsible human actions

APPENDIX B: FRAMEWORK ANALYSIS

	A	B
1	I.A	IS
2	I.A.1	IS
3	I.A.2	IS
4	I.A.3	IS
5	I.A.4	IS
6	I.B	IS
7	I.B.1	IS
8	I B.2	OUGHT
9	I.B.3	IS
10	I.B.4	IS
11	I.C.	IS
12	I.C.1	IS
13	I.C.2	IS
14	I.C.3	IS
15	I.C.4	IS
16	I.D.	IS: OUGHT
17	II.A	IS
18	II.A.1	IS
19	II.A.2	IS
20	II.A.3	IS
21	II.A.4	IS
22	II.B.	IS
23	II.B.1	IS
24	II.B.2	IS
25	II.B.3	IS
26	II.B.4	IS
27	II.C.	IS
28	II.C.1	IS
29	II.C.2	IS
30	II.C.3	IS
31	II.D.	IS
32	II.D.1	IS
33	II.D.2	IS
34	II.D.3	IS
35	II.D.4	IS
36	II.E.	IS
37	II.E.1	IS
38	II.E.2	IS
39	II.E.3	IS
40	II.F.	IS
41	III.A.	IS
42	III.A.1	IS
43	III.A.2	IS
44	III.A.3	IS
45	III.B.	IS
46	III.B.1	IS
47	III.B.2	IS
48	III.B.3	IS
49	III.B.4	IS
50	III.B.5	IS
51	III.B.6	IS
52	III.C	IS
53	III.C.1	IS
54	III.C.2	IS
55	III.C.3	IS
56	III.C.4	IS
57	III.D.	IS
58	III.D.1	IS
59	III.D.2	IS
60	III.D.3	IS
61	III.D.4	IS
62	III.D.5	IS
63	III.E.	IS
64	III.E.1	IS
65	III.E.2	IS
66	III.F.	IS
67	III.F.1	IS
68	III.F.2	IS
69	III.F.3	IS
70	III.F.4	IS
71	III.F.5	IS
72	IV.A	IS
73	IV.A.1	IS
74	IV.A.2	IS
75	IV.A.3	IS
76	IV.A.4	IS
77	IV.B.	IS
78	IV.B 1	
79	IV.B.2	IS
80	IV.C.	IS
81	IV.C.1	IS
82	IV.C.2	IS
83	IV.C.3	IS
84	IV.C.4	IS
85	IV.D.	IS
86	IV.D.1	IS
87	IV.D.2	IS
88	IV.D.3	IS
89	IV.D.4	IS
90	IV.D.5	IS
91	IV.D.6	IS
92	IV.D.7	IS
93	IV.E.	IS
94	IV.E.1	IS
95	IV.E.2	IS
96	IV.E.3	IS
97	IV.E.4	IS
98	IV.E.5	IS
99	IV.E.6	IS
100	IV.E.7	IS
101	IV.E.8	IS
102	IV.E.9	IS

	A	B
103	IV.E.10	IS
104	IV.E.11	IS
105	IV.F.	IS
106	IV.F.1	IS
107	IV.F.2	IS
108	IV.F.3	IS
109	IV.F.4	IS
110	IV.F.5	IS
111	IV.F.6	IS
112	IV.F.7	IS
113	IV.F.8	IS
114	IV.F.9	IS
115	IV.F.10	IS
116	IV.F.11	IS
117	V.A.	IS
118	V.A.1	IS
119	V.A.2	IS
120	V.A.3	IS
121	V.A.4	IS
122	V.A.5	IS
123	V.A.6	IS
124	V.B.	IS
125	V.B.1	IS
126	V.B.2	IS
127	V.B.3	IS
128	VI.A.	IS
129	VI.A.1	IS
130	VI.A.2	IS
131	VI.A.3	IS
132	VI.A.4	IS
133	VI.A.5	IS
134	VI.B.	IS
135	VI.B.1	IS
136	VI.B.2	IS
137	VI.B.3	IS
138	VI.B.4	IS
139	VI.B.5	IS
140	VI.B.6	IS
141	VI.C.	IS
142	VI.C.1	IS
143	VI.C.1	IS
144	VI.C.3	IS
145	VI.C.4	IS
146	VI.C.5	IS
147	VI.C.6	IS
148	VI.C.7	IS
149	VI.C.8	IS
150	VI.C.9	IS
151	VI.C.10	IS
152	VI.C.11	IS
153	VI.C.12	IS
154	VI.C.13	IS
155	VI.C.14	IS
156	VI.C.15	IS
157	VI.C.16	IS
158	VI.D.	IS
159	VI.D.1	IS
160	VI.D.2	IS
161	VI.D.3	IS
162	VI.D.4	IS
163	VII.A.	IS
164	VII.A.1	IS
165	VII.A.2	IS
166	VII.A.3	IS
167	VII.A.4	IS
168	VII.B	OUGHT
169	VII.B.1	IS
170	VII.B.2	OUGHT
171	VII.B.3	OUGHT
172	VII.B.4	IS
173	VII.B.5	IS
174	VII.B.6	IS
175	VII.B.7	IS

C

1 1. Humans and wildlife 2. similarity of needs
2 1. All living things 2. similarity of needs
3 1. All living things 2. similarity of needs
4 1. Plants: All living things 2. value of plants: similarity of h&w
5 1. Wildlife rel. to humans 2. similarity of needs
6 1. Humans and wildlife 2. similarity of needs
7 1. Wildlife 2. info
8 1. Humans and wildlife 2. Adaptation
9 1. Wildlife 2. info
10 1. Wildlife 2. info
11 1. Humans and wildlife 2. similarity of needs
12 1. Humans and wildlife 2. similarity of needs
13 1. Habitat 2. Needs
14 1. Humans and wildlife 2. similarity of needs
15 1. All living things 2. similarity of needs
16 1. Humans 2. Abilities and Responcibilities
17 1. Wildlife 2. Human Values
18 1. Humans 2. Human Values
19 1. Human and Wildlife Relationships 2. expression in human activ.
20 1. Humans 2. Values and needs: the value of wildlife
21 1. Humans 2. Values and activities: the value of wildlife
22 1. Wildlife 2. Values
23 1. Wildlife 2. Values and info
24 1. Wildlife 2. Values and info
25 1. Wildlife 2. Values and info
26 1. Wildlife 2. Values and info
27 1. Wildlife 2. Values
28 1. Human and Wildlife Relationships 2. effect on human activ.
29 1. Human and Wildlife Relationships 2. effect on human activ.
30 1. Human and Wildlife Relationships 2. effect on human activ.
31 1. Wildlife 2. Values
32 1. Human and Wildlife Relationships 2. effect on human activ.
33 1. Human and Wildlife Relationships 2. effect on human activ.
34 1. Human and Wildlife Relationships 2. effect on human activ.
35 1. Human and Wildlife Relationships 2. effect on human activ.
36 1. Wildlife 2. Values
37 1. Wildlife 2. Values
38 1. Wildlife 2. Values
39 1. Wildlife 2. Values
40 1. Wildlife 2. Values
41 1. Environment 2. Variety of lifeforms
42 1. Environment 2. Variety of lifeforms: info (human interaction)
43 1. Environment 2. Variety of lifeforms: info (niche)
44 1. Environment 2. Variety of lifeforms: info (adaptation)
45 1. Ecosystem components 2. Interdependence
46 1. Ecosystem components 2. Interdependence
47 1. Ecosystem components 2. Interdependence : interrelationship
48 1. Ecosystem components 2. dynamic equilibrium
49 1. Animal and plant communities 2. Diversity
50 1. Wildlife Populations 2. cyclic fluxuation
51 1. Humans and Wildlife 2. Natural Laws apply to all living things
52 1. Ecosystem 2. Variation and Change
53 1. All forms of life 2. Change
54 1. Wildlife populations 2. Change
55 1. Natural Communities 2. Succession
56 1. Contributing factors to succession 2. Succession
57 1. Ecosystem 2. Adaptation
58 1. Ecosystem : Habitat 2. Adaptation
59 1. Ecosystem : Wildlife 2. Adaptation

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60 1. Ecosystem : Wildlife 2. Adaptation
61 1. Ecosystem : Wildlife 2. Adaptation
62 1. Ecosystems: Wildlife 2. Adaptation
63 1. Habitat: Living things 2. Reproduction
64 1. Habitat: Living things 2. Reproduction: limiting factors
65 1. Habitat: Living things 2. Reproduction: limiting factors
66 1. Ecosystems 2. Carrying capacity
67 1. Ecosystems 2. Carrying capacity
68 1. Ecosystems 2. Carrying capacity
69 1. Ecosystems : Wildlife 2. Carrying capacity relationships
70 1. Ecosystems : Wildlife 2. Carrying capacity relationships
71 1. Domestic animals: Wildlife: Humans 2. Carrying cap.:Competition
72 1. Resources and Environment 2. Management abilities and goals
73 1. Resource Management 2. Management abilities have limits
74 1. RM: W&H 2. Management has benefits
75 1. RM:W&H 2. Management has benefits
76 1. RM 2. Various management philosophies are sometimes incompatable
77 1. Resource Management : Wildlife 2. Wildlife IS a natural resource
78 1. Resource Management 2. Non-renewable resources
79 1. Resource Management : Wildlife 2. Wildlife IS a renewable resource
80 1. RM : Ha: W 2. Habitat IS key to survival
81 1. RM: Ha: W 2. Factors affecting Habitat
82 1. RM : Ha: W 2. Habitat must sustain breeding pop.
83 1. RM: Ha: W 2. Most endan. sp are due to Ha modification and loss
84 1. RM: Ha: W 2. Reintroduction of sp. into habitat
85 1. RM: WR 2. Management and conservation
86 1. RM: WR 2. Management for human use
87 1. RM: WR 2. Principles of Management and their origin
88 1. RM: WR 2.
89 1. RM: WR 2. Diversity related to human habitat use
90 1. RM: WR 2. Value of Habitat Management to endangered sp.
91 1. RM: WR 2. Man. of one sp. affects others
92 1. RM: WR 2. RM differentates game/non-ga; en./threat;fur;commer.type
93 1. RM: WR 2. Mgt.& Cons. depends on know. of nat. laws & disciplines
94 1. RM : History 2. Progressive sequence of actions
95 1. RM: History 2. Inventory recent: evidence for historic flux.
96 1. RM: History 2. Non-game sp. have begun to receive more attention
97 1. RM : History 2. Scientific knowledge IS limited but growing
98 1. RM: WR 2. Techniques for management
99 1. RM: WR 2. Regulated harvest IS a technique for managment
100 1. RM: WR 2. Regulations necessary but not a substitute for good Ha
101 1. RM: WR 2. Non-nat. sp. introd.: both beneficial& harmful effects
102 1. RM: WR 2. Sp. introduction affects other sp.
103 1. RM: WR 2. Ha. protect/improve/restore considered most important
104 1. RM: WR 2.W mgt. programs based on bio.& socio-polit. consideration
105 1. RM: WR 2. Wildlife IS a public resource
106 1. RM: WR 2. Primary responcibility for w cons. IS w/ govt. agencies
107 1. RM: WR 2. States often have more responsib. for w than fed. govt.
108 1. RM: WR 2. State w agencies are respons. for mgt. on most fed.lands
109 1. RM: WR 2. Fed. agenc. are respon.for w in nation. interest;(e.sp)
110 1. RM: WR 2. Non-govt. groups also conduct conservation activities
111 1. RM: WR 2. Private land provides significant amounts of habitat
112 1. RM: WR 2. $$ from consumptive user pay for many mgt. programs
113 1. RM: WR 2. Most w is in Ha not directly controled by mgt. agencies
114 1. RM: WR 2. Mgt. agencies control w users as well as w
115 1. RM: WR 2. Employ. req. and competition info for jobs in mgt.& cons
116 1. RM: WR 2. Pub. Involv. in w mgt.happens via polit. or org. action
117 1. H&W : History 2. W affect on humans and society past/present
118 1. H&W : History 2. W affect on humans :w as historical source of res

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119  1. H&W: History  2.  W aff. on humans: human society dev.& w influence
120  1. H&W : History  2.  W aff. on humans : Some cultures depend on w
121  1. H&W : History  2.  W aff. on humans : Hist.& mod. art often uses w
122  1. H&W : History  2.  W aff. on humans : Diff. groups see & use w diff
123  1. H&W : History  2.  W aff. on humans :Media affects w & Ha opinions
124  1. H&W : Social policy  2. Mechanisms for policy development
125  1. H&W : Human History   2. Values & trad. of humans reflect w opinion
126  1. WM :Social policy  2. Mechanisms for policy development
127  1. WM : Social policy  2. Internat. policies towards w differ
128  1. HWR 2. Human impacts are increasing worldwide
129  1. HWR  2. Demand for wildlife greater than supply
130  1.  HWR 2. Humans are changing many aspects of plant and animal life
131  1.  HWR 2. Humans are changing many aspects of plant and animal life
132  1.  HWR 2. Loss of habitat IS considered the most important problem
133  1.  HWR 2. Humans change plant and animal life & extinction increasing
134  1.  HWR 2. Issues concerning w  due to social and cultural trends
135  1.  HWR 2. Cultural diffs. create conflicts about wildlife
136  1.  WR 2. Modernization seperates people & nat. world: act/attitude w
137  1.  HWR 2. Economics and human mobility and pop. influence w & Ha
138  1.  HWR 2. Recreational trends affect wildlife
139  1.  HWR 2. Recreational trends affect wildlife
140  1.  HWR 2. Political trends affect wildlife
141  1.  WM: HWR 2. Issues and trends complex/involve alternatives & conseq
142  1.  WM:HWR  2. Public interest and involvement grows
143  1.  WM:HWR  2. Many conflicts exist between interest groups
144  1.  WM: HWR 2.Recr. use of w takes presidence over comm. harvest use
145  1. WM:HWR  2. Native American & other groups conflict over w
146  1. WM: HWR 2. Charging fees on private land for use of w is increasing
147  1. WM:HWR 2. W interest groups increasingly political to achieve goals
148  1. WM: HWR 2. Controversy increases bet. consumptive & non-consum. use
149  1. WM: HWR 2. Controversy bet. consum. users about how much/often/when
150  1. WM: HWR 2. $$ for state w agencies often from consumptive users
151  1. WM: HWR  2. New funding methods are continuing issues
152  1. WM: HWR 2. Recent concerns include policies dictated by $$ sources
153  1. WM: HWR 2. Interest groups and wide range of ethical views about w
154  1. WM: HWR 2. Questions exist concerning efforts to save endangered sp
155  1. WM: HWR 2. Questions about responsibility for mgt. by govt.agencies
156  1. WM: HWR 2. Philosophy and practice of w mgt. supported & criticized
157  1. WM: HWR  2. Value on w controversial/ value intangable and varies
158  1. WM: HWR 2. same as above: add "varies...person to person" to both
159  1. WM: Factors  2. W Ha loss IS common in nearly all nations
160  1. WM: Factors  2. Consumptive use excessive and continuing in world
161  1. WM: Factors  2. Sale of w & products controversy/world implications
162  1. WM: Factors 2. Sp. migrate across borders:internat.effort needed
163  1. WRHA  2. Each person affects the environment
164  1. WRHA 2. Indiv. lifestyle decisions affect w directly or indirectly
165  1. WRHA 2. Personal and community cons. practices & values affect env.
166  1. WRHA 2. W & Ha loss affected by lifestyle altern./ social expectat.
167  1. WRHA 2. Indiv. must seperate desires from needs for ethical actions
168  1. WRHA 2. Responsible env. actions oblig. at all soc. levels esp. ind
169  1. WRHA 2. Human activ. often determines which sp. thrive or disapear
170  1. WRHA 2. Users of w must respect rights & property/obey rules& regs.
171  1. WRHA 2. It's our respons. to avoid waste/exploit. NR incl. w
172  1. WRHA 2. Prosecution of w violations reflects comm. valuing of w
173  1. WRHA 2. Pub. decisions about w via social and political processes
174  1. WRHA 2. Indiv. influence soc. by polit. action & interest groups
175  1. WRHA 2. Indiv. decisions affect w & env. via judgements/choices
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16 i: u
17 R to humans
18 i: R to humans
19 R to human activities
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21 R to human activities
22 R to ecology: R to humans
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72 R to human needs and understanding
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170	R to human activities	
171	R to Human Activities	
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	F	G
1	wildlife : basic needs	TS:VTH
2	basic needs	TS:BIO
3	env	TS:BIO
4	plants	TS:VTH
5	wildlife: habitat	TS:VTH
6	wildlife: env	TS:VTH
7		TS
8	survival	TS:VTH
9		TS
10		TS
11	env	TS:VTH
12	habitat	TS:VTH
13		TS
14	env	TS:VTH
15	env	TS: BIO
16	responcibility: other life forms	VN
17	wildlife	ANTHRO
18	aesthetic & spir. values:wildlife	ANTHRO
19	relationships	VTH
20	wildlife	ANTHRO
21	wildlife	ANTHRO
22	wildlife:ecology: science	VTH:ANTHRO
23	wildlife: ecosystem	TS:VN
24	wildlife	ANTHRO
25	wildlife	TS: ANTHRO
26	wildlife	ANTHRO
27	wildlife	ANTHRO
28	wildlife	ANTHRO
29	wildlife	ANTHRO
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36	wildlife	ANTHRO
37	wildlife	ANTHRO
38	wildlife	ANTHRO
39	wildlife	ANTHRO
40	wildlife	BIO
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51		TS: biocentric
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71		TS
72	natural resources	TS : ANTHRO
73		TS
74	natural resources	TS:VTH
75	natural resources	TS
76		TS
77	wildlife	TS : ANTHRO
78	Non-renewable resources	TS : ANTHRO
79	Renewable resources	TS : ANTHRO
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84		TS
85		TS
86	wildlife	TS : ANTHRO
87	wildlife	TS
88	wildlife	TS : ANTHRO
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116		TS
117	wild and domestic animals	TS:ANTHRO
118	needs" and "wants	TS:ANTHRO.

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119	wild animals and plants	TS: ANTHRO
120	needs" and "wants:wildlife	TS:ANTHRO
121	wildlife	TS: ANTHRO
122	wildlife	TS: ANTHRO
123	wildlife	TS: ANTHRO
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125	wildlife	TS: ANTHRO
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168	Responcibility	VN
169		TS
170	Law and order	VN:ANTHRO
171	Natural resources	ANTHRO
172		TS
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174		TS
175		TS
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1    Humans have intrinsic value:Assoc. w/ humans transfers value to w
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5    Poss. valueing of habitat because of ref. to humans
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11   Poss. valueing of env.  because of ref. to humans
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14   Poss. valueing of env.  because of ref. to humans
15
16
17   Aesthetic" and "Spiritual" are human interests
18
19   Activities listed are sanctioned and valued in virtually all cultures
20
21   Activities listed are sanctioned and valued in virtually all cultures
22   Env./ecology valued rel. to humans in IA&IB. .Science is human constru
23   Env. (and therefore eco.) valued rel. to humans in IA&IB.
24   Only humans would observe wildlife as "env. barometer"
25   Env. (and therefore eco.) valued rel. to humans in IA&IB.
26
27   Social " and "political "are human interests
28
29
30
31   Commercial" and "economic "are human interests
32   Relationships in I.D.1-4 are human centered,1-way,poss.exploitive
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36   Recreation," as implied, is a human activity
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38   These anthro. activities considered  cruel or exploitive by some human
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40   Note:This statement IS qualified relative to traditional human attitud
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51   Biocentric : Humans placed "inside" nature: Comp. Statements App.A: #B
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 72   Statement implies human-defined values are THE value of a "resource."
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 77   Suggests w no different than inanimate nature: implies value as use
 78   ANTHRO as renew/non-renew implies value in use; No mention of other va
 79   ANTHRO as renew/non-renew implies value in use; No mention of other va
 80   Note: Because of prior valuing, all subsequent could be anthro.
 81   Note: Because of prior valuing, all subsequent could be anthro
 82   Note: Because of prior valuing, all subsequent could be anthro
 83
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 85   Note: Because of prior valuing, all subsequent could be anthro
 86   Emphasis on value to humans: none other mentioned or implied
 87   Emphasis on value to humans: none other mentioned or implied
 88   Wise and varied use":Emphasis on value to humans;Protection reason unk
 89   Note: Because of prior valuing, all subsequent could be anthro
 90   Note: Because of prior valuing,all subsequent could be anthro
 91   Note: Because of prior valuing, all subsequent could be anthro
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 98    4 of 7 methods involve physical manipulation of individuals or popula
 99    ANTHRO.is possible:Regulated harvest not as technique but desired out
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124  Section V.B.  IS a TS category because of the emphasis on mgt. theory
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126  see #124
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128  VI.A 1-5 are TS: majority focus on facts and impact on w,not humans
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144  Following statements focus on type of consum.uses& offer no alternative
145              "                           "
146                    "                           "
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159  Re-emphasis on the problems for wildlife, not human disagree or need
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170  Stronger emphasis on rules& regs/"use" of w (anthro) than w concern
171  Emphasis of value on no waste and good use of resources
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174  Could easily be changed to "OUGHT"  with stronger language (e.g. "shou
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APPENDIX C

APPENDIX C: ACTIVITY ANALYSIS

KEY

A= Activity B= Description check C= First subject:

D= Science check E= Skills check F= Defined intrinsic

G= Actual intrinsic H= Statement type I=value reference

J= Object of value K= LOA:Concept Focus

L= Comparison correlation M= Activity classification

Note: Key listing scheme differs from scheme in thesis body

ABBREVIATIONS

Part C: First subject

a=art

l=language arts

m=math

s=science

soc=social st.

Part K: BR=BIO-Respect AR=ANTHRO-Respect

BC=BIO-Concern AC=ANTHRO-Concern

BV=BIO-Value AV=ANTHRO-Value

BN=BIO-Nature AN=ANTHRO-Nature

APPENDIX C: ACTIVITY ANALYSIS

	A	B	C	D	E	F
1	Whats Wild?	y	s		y	n
2	Animal Charades	y	l	y	y	n
3	Bearly Born	y	m	y	y	n
4	Ants on a twig	y	s		y	n
5	Color Crazy	y	s		y	n
6	Interview with a spider	y	l	y	n	n
7	Grasshopper Gravity!	y	s		y	y
8	Wildlife is Everywhere!	y	s		y	n
9	Microtrek Scav. Hunt	y	s		y	n
10	Stormy Weather	y	l	y	y	n
11	The Beautiful Basics	y	s		y	n
12	Everybody needs a home	n	s		y	n
13	Habitat Lap Sit	y	s		y	n
14	Habitracks	y	s		y	n
15	Whats That	y	s		y	n
16	Habatat Rummy	y	s		y	n
17	My Kingdom for a Shelter	y	a		y	n
18	Whats for Dinner	y	s		n	n
19	Litter We Know	y	soc	y	y	n
20	Tracks!	y	s		y	n
21	Wild Words	y	l	y	n	n
22	Animal Poetry	y	l	y	n	n
23	Museum Search for Wildlife	y	soc	n	n	n
24	Lets go fly a kite	y	a	y	n	n
25	Eco-Enrichers	y	s		y	n
26	Seed Need	y	s		y	n
27	Env. Barometer	y	s		y	n
28	Make a Coat!	y	soc	y	n	y
29	What Bear Goes Where?	y	s		y	n
30	Graphananimal	y	s		y	n
31	Urban Nature Search	y	s		y	n
32	Good Buddies	y	s		y	n
33	Forest in a Jar	y	s		y	n
34	Pond Succession	y	s		y	n
35	The Thicket Game	y	s		n	n
36	Adaptation Artistry	y	s		y	n
37	Seeing is Believing...	y	s		y	n
38	Surprise Terrarium	y	s		y	n
39	Polar Bears in Phoenix?	y	s		y	n
40	Quick Frozen Critters	y	s		y	n
41	Classroom Carrying Capacity	y	s		y	n
42	Muskox Maneuvers	y	s		n	n
43	How Many Bears Can Live...?	y	s		y	n
44	Visual Vocabulary	y	s		y	n
45	Rainfall and the Forest	n	s		y	n
46	Owl Pellets	y	s		y	n
47	Wildwork	y	n	y	y	n
48	Oh Deer!	y	s		y	n
49	Here Today, Gone Tomarrow	y	s		y	y
50	Who Lives Here?	y	l	y	y	n
51	Planting Animals	y	l	y	y	n

	A	B	C	D	E	F
52	Smokey the Bear Said What?	n	s		y	n
53	Checks and Balances	y	m	y	y	n
54	No Water Off A Ducks Back	y	s		y	n
55	The Hunter	y	soc	y	y	y
56	Lobster in Your Lunchbox	y	m	y	y	n
57	First Impressions	y	s		y	n
58	And the Wolf Wore Shoes	y	l	y	y	n
59	Sat. Morn. Wildlife Watching	y	l	y	y	n
60	Cartoons and Bumper Stickers	y	l	n		n
61	Does Wildlife Sell Cigarettes?	y	l	n		n
62	The Power of A Song	y	l	n		n
63	Wildlife in National Symbols	y	soc	y	y	y
64	Changing Attitudes	y	soc	n		n
65	Learning To Look...	y	l	y	y	n
66	Too Close For Comfort	y	s			n
67	Shrinking Habitat	y	soc	y	y	n
68	Migration Barriers	y	soc	y	y	n
69	To Zone or Not To Zone	y	soc	y	y	y
70	Deadly Links	y	soc	y	y	n
71	Keeping Score	y	s			y
72	Plan. for People and Wildlife	y	soc	y	y	n
73	Ethi-Thinking	y	soc	y	y	n
74	Playing Lightly...	y	soc	y	y	n
75	Water's Going On?	y	m	y	y	n
76	What did your Lunch Cost W.L.?	y	soc	y	y	n
77	Flip the Switch for W.L.	y	s			n
78	Ethi-Reasoning	y	soc	y	n	n
79	Can Do!	y	soc	y	y	n
80	Improving W.L. Habitat...	y	s			n
81	Enviro-Ethics	y	l	y	y	n

	G	H	I	J
1	n	is		
2	n	is		
3	n	is	r to humans	survival : bears
4	n	is	r to humans	basic needs
5	n	is		
6	n	is	poss. i	diversity
7	n	is: ought		responsibility
8	n	is	r to humans	env : habitat
9	n	is	r to humans	env : habitat
10	n	is	u	experience of commonality
11	n	is	r to humans	basic needs
12	n	is	r to humans	shelter
13	n	is		
14	n	is	u	habitat
15	n	is	r to humans	
16	n	is		
17	n	is		
18	n	is	r to humans	plants and other foods
19	n	is		
20	n	is		
21	n	is	u	natural experiences
22	n	is	r to humans	animals
23	n	is	r to humans	animals
24	n	is	r to humans	animals
25	n	is	u	animals
26	n	is	u	animals
27	n	is	r to humans	animals
28	n	is	r to humans	renew. and non-r. resourc
29	n	is	u	adaptation
30	n	is		
31	n	is		
32	n	is	u	interdep. relationships
33	n	is		
34	n	is		
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80	n	is		
81	n	is		

	K	L	M
1	wild & dom. animals:distinguish	TS-1-12	ts
2	wild & dom. animals:distinguish	TS-1-12	ts
3	humans and bears: similarity	TS-1-12:AV-11	ts:vth
4	humans and wildlife: similarity	TS-1-12	ts:vth
5	wildlife: color variety	TS-1-12	ts
6	wildlife:many physical forms	TS-1-12:BV-4-8	ts : poss bio
7	wildlife:forms/human:responsibility	TS1-12:BN-5:BR-3	ts: bio
8	humans and wildlife: similarity	TS-1-12	ts:vth
9	humans and wildlife: similarity	TS-1-12	ts:vth
10	same as #9 with animal perspective	BC-11	ns : poss bio
11	humans and wildlife: similarity	TS-1-12:AV-11	ts:vth
12	humans and wildlife: similarity	TS-1-12:AV-11	ts:vth
13	habitat:concept	TS-1-12	ts
14	combine #'s 12 & 13	TS-1-12	ts
15	combine #'s 12 & 13	TS-1-12:AV-11	ts:vth
16	habitat:concept	TS-1-12	ts
17	wildlife: importance of shelter	TS-1-12	ts
18	plants:needs/ add #8	TS-1-12:AV-11	ts:vth
19	litter: dangers and responsibility	TS-1-12	ts
20	animal tracks: identify	TS-1-12	ts
21	outdoors: journal writing		ns
22	wildlife: inspiration for poetry	AV 8	anthro
23	wildlife: inspiration for art	AV 8	anthro
24	wildlife: inspiration for art	AV 8	anthro
25	wildlife: ecological contribution	TS-1-12	ts
26	wildlife: ecological contribution	TS-1-12	ts
27	wildlife: ecological indicator	TS-1-12:AV 8	ts:anthro
28	ID clothing sources:resources	AV 10	anthro
29	wildlife: adaptation	TS-1-12	ts
30	env.:characteristic lifeforms	TS-1-12	ts
31	env.:characteristic lifeforms	TS-1-12	ts
32	interdependence: concept	TS-1-12:BV 1	ts:bio
33	succession: concept	TS-1-12	ts
34	succession: concept	TS-1-12	ts
35	wildlife: importance of adaptation	TS-1-12	ts
36	birds: adaptation	TS-1-12	ts
37	wildlife: adaptation in vision	TS-1-12	ts
38	wildlife: importance of camouflage	TS-1-12	ts
39	animals:adapt./human respon.in move	TS-1-12:AN-8	ts: vth
40	wildlife:adaptation&populat.theory	TS-1-12	ts
41	carrying capacity:concept	TS-1-12	ts
42	predator/prey relat.:adaptation	TS-1-12	ts
43	habitat:importance	TS-1-12	ts
44	ecological terms	TS-1-12	ts
45	habitat·physical and life changes	TS-1-12	ts
46	food chain: concept	TS-1-12	ts
47	resource management:careers	TS-1-12	ts
48	interelationship:population dynamic	TS-1-12	ts
49	endangered species:terminology	TS-1-12	ts
50	native vs. non.nat species:issues	TS-1-12	ts
51	resource mgt:animal transplanting	TS-1-12	ts

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	K	L	M
52	fire: effects on wildlife & habitat	TS-1-12	ts
53	wildlife mgt: role of managers	TS-1-12	ts
54	pollution:consequences to all life	TS-1-12	ts:vth
55	hunting: attitude examination	TS-1-12:BN/AN2,9,	ts:vth
56	plants: domestic have wild origin	TS-1-12:AV-1-11	ts:vth
57	wildlife: human beliefs	TS-1-12:AV-3	ts:vth
58	animals: use in lit./human beliefs	TS-1-12:AV-3	ts:vth
59	animals: use in media/human beliefs	TS-1-12:AV-3	ts:vth
60	animals: use in humor	AN-3,8	ns:vth
61	animals: use in advertizing	AN-3,8	ns:vth
62	animals: use in arts	AN-3,8	ns:vth
63	animals: use in national sybmols	AN-8	ts:vth
64	humans: attitudes toward wildlife	AC-5,12	ns:vth
65	humans: enhanced perception	TS-1-12	ts
66	crowding: impacts on humans & wild.	TS-1-12	ts:vth
67	wildlife: land development impacts	TS-1-12	ts
68	wildlife migration: barrier effects	TS-1-12	ts
69	land use planning:importance&issues	TS-1-12:AC-2	ts:poss.anthro
70	environment:effects of pesticides	TS-1-12	ts
71	local wild. harm: cause & effect	TS-1-12	ts
72	land use planning:importance&issues	TS-1-12	ts
73	outdoor use:harmful & non-h. action	TS-1-12	ts
74	# 74 plus play and awareness	TS-1-12	ts
75	water: conservation	TS-1-12	ts
76	food production:cost to wildl.	TS-1-12	ts
77	energy production: effects on wild.	TS-1-12	ts
78	human judgement: ecological choice	TS-1-12	ts
79	human actions: ecological choice	TS-1-12	ts
80	habitat: improvement&preservation	TS-1-12	ts
81	human judgement: ethical choice	TS-1-12:BC-1	ts: poss. bio

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